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UTEROPLACENTAL APOPLEXY

Report of Three Cases

JAMES PATRICK HENNESSY, M.D., F.A.C.S.

NEW YORK CITY

Rigby[1], in 1775, first called our attention to the condition of premature separation of the normally implanted placenta and gave it the name of *accidental hemorrhage,* to distinguish it from the other chief cause of bleeding in the last trimester of pregnancy—namely, placenta previa. Rudolph Holmes[2], in 1901, further emphasized the frequency and clinical importance of this complication and suggested the name *ablatio placentae.* De Lee[3] gave the term *abruptio placentae* to those cases in which the placenta is partially or wholly separated from the uterine wall before delivery.

The term *uteroplacental apoplexy* was first used by Couvelaire as a designation of that serious obstetrical complication in which there are marked changes in the uterine wall as a result of extensive detachment of a normally implanted placenta, with a tendency of the hemorrhagic process to reach its maximum under the peritoneum. In 1911[4] and again in 1912[5] he described serious cases of abruptio placentae and called the condition "apoplexie utero-placentaire". He compared the appearance of the uterus to that of an ovarian cyst with a twisted pedicle. The surface was congested and brownish, with ecchymoses extending out on to the ovaries and broad ligaments. The uterine muscle was degenerated and infiltrated with blood. Petechiae of various sizes, some of them ruptured, were present beneath the peritoneum, and the serosa was split in places, allowing blood to escape into the uterine cavity. These findings indicate a toxemic causation of the primary rupture of the blood vessels, followed by detachment of the placenta. The bloody extravasations between the muscle fibers would explain the postpartum atony of such a uterus.

The apoplexy of Couvelaire presents a picture so typical as to be almost pathognomonic. It differs so widely from all other examples of ablatio placentae that it is generally considered to be in a class by itself. The subperitoneal hemorrhages are widely diffused throughout the uterus, appearing as reddish black stains of various sizes, single or multiple, and forming large blotches extending unevenly in all directions and so confluent that the entire organ is blanketed in hemic effusions. The discoloration is most marked in the area over the placental site. The tissues adjacent to the uterus—the pelvic and parietal peritoneum, broad and round ligaments, tubes and ovaries—usually participate in the picture. The extravasated blood rarely develops into a hematoma. The evidences of the hemorrhage are indicative of the saturation of the wall itself.

One strange feature of this condition is the relatively small amount of bleeding on uterine incision for a cesarean section; in

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Read before the Seaboard Medical Association of Virginia and North Carolina, at Washington, N. C., December 5, 1940.

1. Rigby, Edward: An Essay on the Uterine Haemorrhage, London, J. Johnson, 1775.
2. Holmes, R. W.: Ablatio Placentae: A Study Based upon 200 Cases in the Literature, Am. J. Obst. 44:753-784, 1901. Ablatio Placentae, J.A.M.A. 51:1845-1849, 1908. The Relationship of Uteroplacental Apoplexy to Ablatio Placentae, Am. J. Obst. and Gynec. 6:517-552, 1923.
3. DeLee, J. B.: Principles and Practice of Obstetrics, ed. 7, Philadelphia, W. B. Saunders, 1938.
4. Couvelaire, A.: Traitement chirurgical des hemorragies utero-placentaire avec decollement du placenta normalement insere, Ann. de gynec. et d'obst. 2. ser. 8:591-608, 1911.
5. Couvelaire, A.: Deux nouvelles observations d'apoplexie utero-placentaire, Ibid, 2. ser. 9:486-495, 1912.

one of our reported cases there was practically none. This absence of undue bleeding has not been explained. It may be that a toxic substance first produces a permeability of the uterine vessels with extravasation on or about the time of placental separation, and that, as a result, there is an arrest of bleeding. The hemorrhage of toxic apoplexy is not so profuse as that in other types of ablation, and postpartum hemorrhage is exceptional.

The clinical course gives no hint of the presence of a Couvelaire apoplexy other than intensity of symptoms; the condition can be identified only by inspection and palpation in the course of a cesarean section.

Uteroplacental apoplexy is not of frequent occurrence. Davis and McGee[6] reported 164 cases of abruptio placentae in 40,000 deliveries at the Chicago Lying-In Hospital, and 15 of these had the typical Couvelaire uterus. Harrar[7], at the New York Lying-In Hospital, found only one case of Couvelaire uterus in 100,000 deliveries. In the majority of cases there was no definite clinical evidence of toxemia.

Etiology

There are many possible causes of uteroplacental apoplexy; among them may be included toxemia, trauma, torsion of the uterus, degeneration and inflammatory lesions of the decidua, and vascular disease. It has been shown[8] that there is a definite relationship between hyperprolanuria and pathologic conditions in pregnancy. Next to that in hydatid mole, the greatest output of prolan in the urine is to be found in cases of abruptio placentae, especially in uteroplacental apoplexy. In eclampsia, also, there is an increase of prolan in the blood, cerebrospinal fluid, and placenta, and this is also true in hyperemesis and toxemia during the early months of pregnancy. It is possible that the body may be able to dispose of these excess amounts through the urine and the cerebrospinal fluid, but retention of excess results in hydatid mole, abortion or abruptio placentae. The cause of the premature separation of the placenta, and especially of uteroplacental apoplexy, may be a disturbance in the hormonal relationship between the placenta and the corpus luteum. Accidental hemorrhage is more likely to occur in all of these complications. but it is difficult to prove that any one of them is the constant etiological factor.

Pathology

Uteroplacental apoplexy, first described by Couvelaire, and extensively studied by Essen-Moeller[9] and Williams, presents a characteristic pathologic picture. Although its exact etiology is unknown, the pathologic findings favor a toxic origin. *Macroscopically*, the uterus, tubes, ovaries, and often the broad ligaments present a bluish, purplish, mottled appearance. This characteristic discoloration may, in fatal cases, extend to the entire peritoneum lining the pelvis and lower abdomen. Sometimes the peritoneal cavity contains dark free blood which has oozed through the fimbriated ends of the tubes or through tears in the serosal surface of the uterus and adnexa. The uterus has lost the power of contraction and is flabby and stretched. The cut surface is wet and presents a bluish or purplish appearance most marked in the inner and outer layers of the uterine wall. *Microscopically* there is found an extensive intramuscular hemorrhage, infiltrating the muscle bundles and so dissociating the muscle fibers that they lose their integrity and their contractile power. The process is most marked in the inner and outer layers of the uterine wall, but the hemorrhagic extravasations may extend to the adnexa, the broad ligaments, and the retroperitoneal space. The muscle tissue shows, in places, a marked edema. In advanced cases this seems to be more than a simple edema; apparently there is an actual solution of much of the cytoplasm of the muscle cells. Many of the small vessels show a definite increase in the size and number of the endothelial cells lining their walls. The nuclei often appear swollen and hydropic; the cytoplasm is rounded and vacuolated. A severe degree of arteriosclerosis may be noted in the large vessels. The intima of each vessel is thick to the point of obliterating the lumen. Vacuoles are present, and hemorrhage is visible in the intima of the center vessel.

Symptoms

Abdominal Pain. In some cases the onset is sudden, with severe excruciating pain,

6. Davis, M. E. and McGee, W. B.: Abruptio placentae, Surg., Gynec. and Obst. 53:768-779, 1931.
7. Harrar, J. A.: Accidental Hemorrhage: 254 Cases in 100,000 Confinements at the New York Lying-In Hospital, Bull. Lying-In Hosp., N. Y. 11:151-157, 1917.
8. Heim, K.: Zur Pathogenese der vorzeitigen Loesung der Plazenta, Monatschr. f. Geburtsh. u. Gynak. 104:1-22, 1936.
9. Essen-Moeller, E.: L'hemorragie retro-placentaire, Arch. mens. d'obst. et de gynec. 4:145-169, 1913.

usually continuous and colicky, in the lower abdomen. In others, there is first a dull ache which later becomes continuous and colicky. The pain may grow progressively worse, and, as labor sets in, the symptoms may be altered. Abdominal discomfort is associated with the accumulation of blood in the uterus. The rapid distention of the uterus causes stretching of the peritoneum and intense pain.

Hemorrhage. In partial separation of the placenta bleeding may be either concealed or external. In the former type, the bleeding either occurs behind the placenta or is concealed in the uterine cavity by the presenting parts or by the free placenta acting as a tampon for the lower uterine segment. As the case progresses, there will be external bleeding with expulsion of clots. Early recognition of bleeding in the uterine cavity is important, since it indicates a serious condition with danger of exsanguination. This is apparent in cases of uteroplacental apoplexy, where the blood not only accumulates in the uterine cavity but extravasates and infiltrates into the uterine musculature, underneath the serosa, between the leaves of the broad ligaments, and retroperitoneally. It is believed that some alteration of the blood vessel walls accounts for this extravasation of blood. The systemic signs of hemorrhage soon develop: anemia, high pulse rate, lowered blood pressure, and cold and clammy skin. The patient complains of thirst, faintness, dizziness and exhaustion. The shock is most marked in uteroplacental apoplexy and may be due either to irritation of the peritoneum by the hemorrhage beneath it or to an unidentified toxin.

Uterine Tenderness. In complete separation of the placenta there is a more or less board-like rigidity of the uterus which is pathognomonic. Tenderness is almost always associated with such rigidity and may be elicited over the entire uterus so that the gentlest palpation is very painful. This is especially true in uteroplacental apoplexy. The board-like rigidity is due to a tetanic contraction of the musculature, the uterus having no periods of relaxation. This tetanic contraction causes constant tenderness and pain, but does not advance labor by effacing and dilating the cervix, although rhythmic contractions are more severe than in normal cases. There is a paralysis of the uterine musculature as a result of infiltration of blood within its walls.

Changes in the Uterus. In the concealed type of hemorrhage the accumulation of blood within its cavity gradually enlarges the uterus. The fundus is higher than would be indicated by the estimated duration of pregnancy. Increase in the size of the uterus during the period of observation is a valuable diagnostic sign. As the uterus grows larger, fetal movements can no longer be seen or felt; it becomes difficult to outline the fetus, the fetal heart is not audible, and the child dies, asphyxiated by a failing blood supply.

Diagnosis

Complete separation of the placenta can be diagnosed by the appearance of external hemorrhage in the last trimester of pregnancy, associated with moderate or severe abdominal pain. A gradual increase in the size of the uterus and a change in its contour may indicate a concealed hemorrhage. Marked uterine tenderness extending laterally over the region of the broad ligaments usually signifies uteroplacental apoplexy. Painless bleeding in the last trimester is readily diagnosed as placenta previa; in this case the cervix is effaced to some extent and the placenta can be palpated.

Prognosis

Premature separation of the placenta, in its more serious phases, is probably the most dangerous complication of pregnancy. It is safe to say that complete separation is fatal to from 25 per cent to 50 per cent of the mothers and to 95 per cent of the babies, regardless of the kind of treatment employed. In partial detachment, skillful treatment will save a larger proportion. Early diagnosis and immediate institution of treatment are probably the most important factors in saving the lives of both mothers and children.

Case Reports

Case 1. Mrs. M. McH., Para II, Gravida III, aged 32 years, married three years, was admitted to St. Ann's Maternity Hospital by ambulance at 11:30 p. m. on January 22, 1936. Her family and personal history were negative. Menstruation began at the age of fourteen and periods were regular, every twenty-eight days, lasting five days, and

with no dysmenorrhea. She had had two spontaneous abortions, the first at sixteen weeks and the second at nine weeks. Her last period was April 24, 1935; life was felt August 27, 1935; the estimated date of confinement was January 29, 1936.

Physical examination revealed a well developed female, weighing 160 pounds, 5 feet, 5 inches tall. Except for a faint systolic murmur at the apex and moderate edema of the ankles general examination was negative. Wassermann and urine tests were also negative.

At six o'clock on the evening of her admission to the hospital she complained of sudden colicky pain in the lower abdomen which gradually increased in severity until it became continuous, with no relief. There was no bleeding.

Examination revealed a large, tense, rigid uterus, filling the abdomen. Tenderness extended out to the sides and was so marked that palpation was painful. The fetal heart was not audible. The cervix was long, fairly soft and patulous, barely admitting the tip of the finger. The blood pressure was 108 systolic, 68 diastolic; the pulse 112. As her condition was poor, her blood was typed and found to be type 11; 500 cc. of citrated blood was given by transfusion. She responded fairly well and slept for about an hour. Slight vaginal bleeding was then noted and the severe colicky pain began with renewed vigor.

The diagnosis of ablatio placentae being established, the patient was prepared for immediate laparotomy. Under nitrous oxide-ether anesthesia the abdomen was opened, exposing a large, tense, rigid uterus, of a brownish color, markedly injected, with petechiae of various sizes scattered here and there. The serosa was split in places, allowing blood to ooze. The infiltration of blood in the uterine wall had extended to the tubes, ovaries and broad ligaments; there were a few ounces of blood serum in the cul-de-sac. A hurried cesarean resulted in the delivery of a dead baby weighing 7 pounds, 2 ounces; this was followed by a supracervical hysterectomy by the clamp method. As there was more evidence of shock, another transfusion was started, but the patient failed to rally and died just as the skin edges were being approximated.

Pathological Report. The whole uterus measured 8x16 inches and was thick walled, with a rough shaggy endometrial surface.

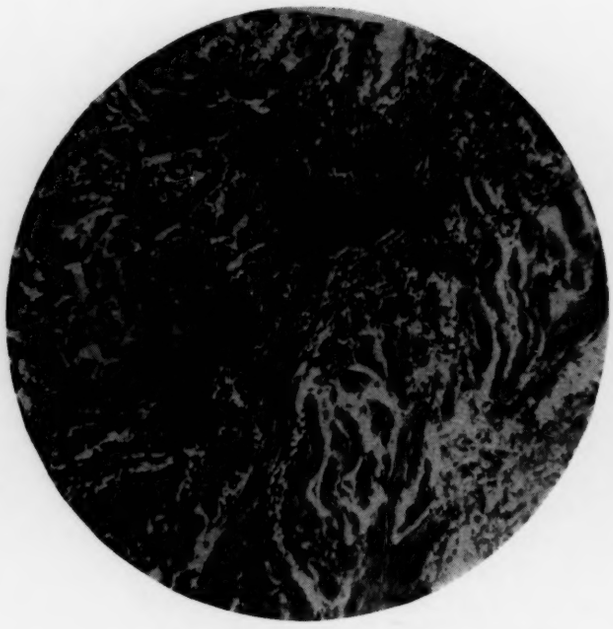

Fig. 1 (case 1), showing widespread hemorrhage into the uterine muscle. The muscle bundles are spread wide.

On section, the wall was found to be riddled by blood.

Microscopical Description. The outstanding change was the widespread hemorrhage into the uterine muscle. The muscle bundles were spread wide and contorted by extravasated red cells. Beneath the serosa the contorted muscle bundles were visible. Beneath the decidua the muscle and collagen were quite often non-nucleated, and the decidual tissue had undergone degenerative changes; in some folds complete loss of nuclei pointed to tissue death. Several of the smaller vessels of the uterine wall showed a peculiar change in their subintimal tissue. The endothelium of the vessels was intact; the layered muscle normally surrounding the vessels had retracted or had been pulled away from the subintimal tissue through one-half of their circumference, leaving in its place a fine reticulum poor in nuclei. The change placed the lumen of the vessel eccentrically in the muscle coat.

Pathological Diagnosis. Widespread hemorrhage into the uterine muscle.

Case 2. Mrs. A. B., a primipara, aged 27 years, married two years, was seen in consultation at the Physicians Hospital, Jackson Heights, Long Island, on May 12, 1938, at 3 p. m. Pain in the abdomen had begun at 2 a. m., and was at first moderate and regu-

Fig. 2. (Case 3). Posterior surface of the uterus, showing the extensive apoplectic involvement.

lar, later becoming colicky and almost continuous. Vaginal bleeding had begun at 3 a. m. and had continued until the time she was seen. There was some dyspnea and a feeling as if the abdomen was growing larger.

Her history showed that menstruation had begun at the age of fourteen; periods occurred every twenty-eight days and lasted four or five days and were moderate in amount, with no dysmenorrhea. The last period was August 20, 1937; the estimated date of confinement was May 27, 1938. There was no history of toxemia or trauma. Wassermann and urine tests were negative.

Examination revealed the uterus (fundus) at the ensiform, larger than a full term pregnancy, tense, and ligneous in consistency. The fetal parts could not be palpated and the fetal heart sounds could not be heard. A very careful vaginal examination with mercurochrome instillations revealed a long thick cervix which barely admitted the tip of the finger. There was moderate bleeding. As the patient showed signs of shock, a transfusion of 750 cc. of citrated blood was given, after which she seemed a little more comfortable.

She was prepared for a laparotomy and under gas-oxygen-ether anesthesia the abdomen was opened. The uterus was found to be somewhat edematous, tense on palpation, purplish in color and somewhat friable. This was especially true of the anterior wall and much less so of the posterior wall. A mid-line incision was made and a dead female fetus, weighing 7 pounds, 6 ounces, was delivered by podalic extraction. Since the uterus, although soft and flabby, showed signs of contracting slowly, it was wrapped in hot saline pads and gently massaged for thirty minutes. The color improved, the tone became better, and it contracted fairly well. It was then packed with wide iodoform gauze packing and the wound was closed in three layers. Another transfusion of 500 cc. citrated blood was given and the patient was returned to her room in fairly good condition. After a stormy period of seven days, she finally made a good recovery and was discharged from the hospital at the end of twenty-one days. She has since been delivered of a seven pound female child by cesarean section. The scar of the previous section was found at that time to be smooth, firm and strong.

Case 3. A primipara, aged 15 years, was seen five times in the clinic, and was admitted to the Misericordia Hospital on June 30, 1940 at 3:30 p. m., complaining of colicky abdominal pain and moderate vaginal bleed-

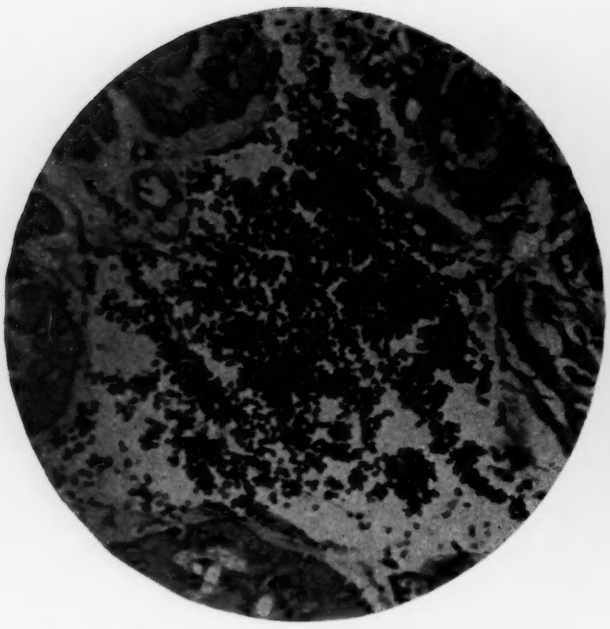

Fig. 3. (Case 3). H & E section. Low power. The photograph shows a marked hemorrhage into the connective tissue between bundles of muscle fibres.

Fig. 4. (Case 3). H & E section. Low power. This is a photograph of the myometrial fibres. Note that the cells are swollen, present a smudgy appearance, are vacuolated and contain no nuclei. Edema is present, as can be seen from the separation of the muscle cells.

ing which had started three hours earlier. At first the pains were slight, but they gradually became more severe, recurring every four minutes.

The patient's family history was negative; her personal history included measles and chicken pox. Menstruation began at the age of twelve; periods occurred every twenty-eight days and lasted four or five days; there was no dysmenorrhea. The last period was November 1, 1939; estimated date of confinement was August 8, 1940.

Her blood pressure had ranged from 110/75 to 124/76. Her prenatal course had been normal. Wassermann and urine tests were negative. Examination revealed a uterus the size of a full term pregnancy, symmetrical in outline, tense, ligneous in consistency. The fetal parts could not be satisfactorily palpated and the fetal heart sounds were inaudible. A very careful vaginal examination with mercurochrome instillation showed a long, slightly softened, patulous cervix, barely admitting the tip of the finger. The patient showed definite signs of shock and her blood pressure was 85 systolic, 50 diastolic. She was given 550 cc. of citrated blood by transfusion and one-sixth grain of morphine sulfate, after which she rested for about an hour and the blood pressure rose to 110 systolic, 70 diastolic.

A diagnosis of ablatio placentae was made and she was prepared for a laparotomy. Under nitrous oxide-ether anesthesia the abdominal cavity was opened through a median suprapubic incision. The uterus was edematous, ecchymotic, mottled and purplish in color, with petechiae of various sizes scattered under the peritoneum. Some of these had ruptured, exuding serum. The area of infiltration and edema extended from the cervix to the fundus on both the anterior and posterior walls, to the tubes, ovaries, and broad ligaments. There were a few ounces of free blood serum in the pelvic cavity.

On opening the uterus in the midline, the placenta was found to be completely separated, with a large amount of old clotted blood between it and the uterine wall. A minimal amount of bleeding was noted on incision. A dead female fetus weighing 5½ pounds was delivered with the placenta *en masse*. Immediately following delivery the uterus was observed for fifteen minutes; the muscles remained flabby and showed no tendency to contract. Therefore a supracervical hysterectomy with removal of the tubes and ovaries was performed by the clamp method. The patient was given another

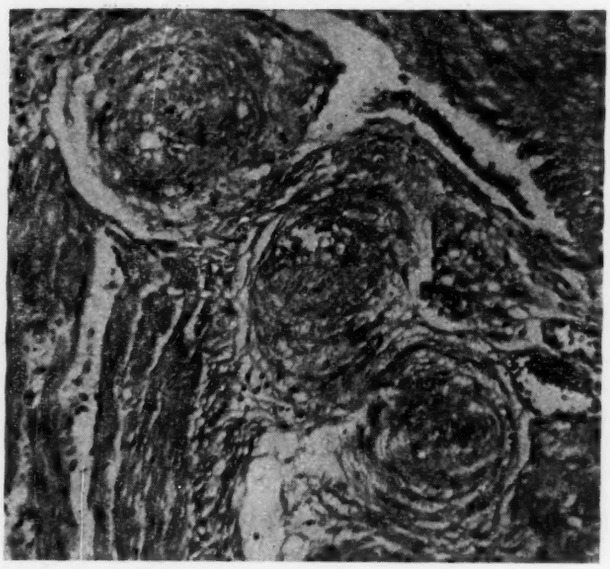

Fig. 5. (Case 3). H & E section. Low power. Note the severe degree of arteriosclerosis. The intima of each vessel is thick to the point of obliterating the lumen. Vacuoles are present, and in the center vessel hemorrhage can be seen in the intima.

transfusion of 450 cc. of whole blood and was returned to her bed in good condition. The blood pressure was 130 systolic, 70 diastolic, and the pulse 105. After the third day she had an uneventful convalescence and was discharged from the hospital on the sixteenth day. She was seen on October 18, 1940, at which time she stated that she felt very well, had married, put on weight, and had no menopausal symptoms.

Pathological Report. Representative blocks, cut from various portions of the uterus, showed the same changes in all. Conspicuous among these was the presence of fresh hemorrhages of varying size both in the serosa and throughout the myometrium, chiefly in the loose edematous fibrous tissue surrounding muscle bundles. There was no accompanying white blood cell infiltration. The smooth muscle fibers exhibited abundant evidence of degeneration: their outlines were indistinct; they appeared swollen, and stained unevenly, some dark, others very light. Many cells were fragmented, others vacuolated. In many the nuclei appeared to be absent and, where present, they stained poorly and were swollen. Many contained a large vacuole which displaced the chromatin peripherally and compressed it against the nuclear membrane. The sinusoids and veins within the myometrium were widely dilated and filled with blood. A slight distance beneath the endometrium a medium sized artery was found which was tortuous and markedly thickened. The thickening was entirely intimal, caused by endothelial proliferation and fibrosis, and so marked that in several sections of the vessel no lumen was visible. In another section a hemorrhage was visible in the thickened intima. In a second slide, showing a similarly changed vessel, large fat vacuoles displaced the endothelium and further narrowed the lumen.

Treatment

One rule governs the management of all cases of separation of the placenta: delivery must be effected at the earliest possible moment and with the least possible loss of blood. When the separation occurs at or immediately before the onset of labor, when the cervix is uneffaced and undilated, hysterotomy should be performed, regardless of the condition of the child. Whether the infant be living or dead, the uterine blood spaces will continue to pour their contents into the uterine cavity, and the presence of the fetus prevents contraction of the uterus. Immediate cesarean section is the procedure of choice, especially when uteroplacental apoplexy is suspected.

Whether hysterectomy will be necessary depends upon the ability of the uterus to contract and control the bleeding[10]. In severe uteroplacental apoplexy the uterus is soft and boggy because of the profuse infiltration of blood between the muscle bundles and is thus incapable of contraction. It is then most liable to infection and necrosis. This is known as the Couvelaire uterus; it is a dead organ and should be removed as a matter of routine. Whenever there is any doubt the uterus should be sacrificed.

The accompanying anemia is treated by blood transfusion, intravenous glucose, and hypodermic saline solutions. Morphine is administered for pain and shock. Patients in shock must be rapidly prepared before surgical intervention. The above mentioned measures will improve the patient's chances for recovery from operation. Frequent use of blood transfusions has marked a definite advancement in the treatment of such hemorrhagic cases.

10. Phaneuf, L. E.: Uteroplacental Apoplexy: Report of Two Cases with a Review of the Literature, Boston M. and S. J. 192:1037-1046, 1925.

Summary

1. Three cases of uteroplacental apoplexy following premature detachment of the placenta are reported. In one, the separation was almost complete, while in two it was complete and the placenta was free in the uterine cavity. The bulk of the hemorrhage was retained within the uterine cavity. All had internal and external hemorrhage at some time.

2. These patients showed no evidence of toxemia. The results of urine and Wassermann tests were negative. There was no history of trauma.

3. In two cases the uterus was removed because of the extensive infiltration and the failure of the uterus to contract. In one case contractions were fairly strong and the uterus was left *in situ*.

4. Two of the patients were primiparae and one was a multipara. Parity apparently has no part in the causation of this condition.

5. It is not always possible to tell whether the separation is complete or partial. Unless the uterus is inspected at operation or autopsy an accurate diagnosis cannot be made, since there are no characteristic signs denoting the infiltration of the myometrium with blood[11].

6. Reduction of maternal and fetal mortality depends on early hospitalization and the liberal use of prophylactic transfusions. Regardless of the type of placental separation or the method of delivery, excessive loss of blood leads to death, while if blood is conserved many can be saved.

7. Hysterectomy is indicated if the uterus fails to contract and if hemorrhage persists.

11. Irving, F. C.: The Conservative Treatment of Premature Separation of the Normally Implanted Placenta, Am. J. Obst. and Gynec. 34:881-889, 1937.

The Clinical Sense. — You may be skilled in the sciences, facile with chemical, physical, biological and many other technics, you may know the physical manifestations of many diseases, you may contribute to the store of knowledge and be a medical scientist, but you will not be a physician until you have developed what has been called a clinical sense. This is an acquired faculty based subtly but soundly on a broad knowledge, a retentive memory, a discriminating and orderly habit of mind, combined with an understanding of mankind. — Austrian, Charles R., M.D.: The Care of the Patient, New England J. Med. 223:695 (October 31) 1940.

STUDIES IN HISTAMINASE

The Effect of Histaminase on the Histamine Wheal

EDWIN W. VAUGHAN, M. D.*
GREENSBORO, NORTH CAROLINA
and
WYNDHAM B. BLANTON, M. D.
RICHMOND, VIRGINIA

The mechanism of the wheal and flare as a part of the so-called "triple response" was accurately described by Lewis in 1927[1]. The wheal is a localized edema of the upper cutis caused by the escape of fluid from capillary walls normally capable of retaining it. The flare is the result of arteriolar dilatation and is a local nervous reflex. The increased permeability of the endothelial cells of the capillary network which occurs during whealing, as well as the flare, is regarded as a histamine-like effect. Any sort of injury to the skin—mechanical, thermal, chemical, electrical or the interaction of antigen and antibody—may liberate the wheal-and-flare-producing histamine-like or H substance from the cells of the cutis. The "triple response" with characteristic wheal and flare can be produced at will by the intracutaneous injection of histamine phosphate. Urticaria is an allergic disease characterized by the sudden appearance of areas of local swelling of the skin commonly described as wheals. It is believed that this typical lesion in urticaria may also be a histamine effect[2].

In 1930 Best and McHenry[3] showed that a tissue extract with the properties of an enzyme, called by them histaminase, was capable of neutralizing histamine when incubated with it for twenty-four hours at 37.5 C. The application of this discovery to clinical medicine has already begun and his-

From the Immunology Clinic, Medical College of Virginia.

* B. Armistead Shepherd Fellow in Immunology.

The histaminase used in these studies was kindly furnished by the Winthrop Chemical Company and is marketed under the name of Torantil (enteric coated capsules, pills, and powder for solution in diluting fluid for parenteral use.)

1. Lewis, Thomas: Blood Vessels of the Human Skin and Their Responses. London, Shaw and Sons, 1927.
2. The work of Grant et al. and of Dale, which suggests that urticaria may be due to the release of acetylcholine in the skin due to stimulation of cholinergic nerve fibers, and that the release of acetylcholine then leads to the liberation of H substance with the production of the wheal and flare, does not invalidate the importance of studies of a histamine-like substance in the urticarial diseases.
3. Best, C. H. and McHenry, E. W.: The Inactivation of Histamine, J. Physiol. 70:349, 1930.

taminase is being widely tried in a number of allergic diseases[4]. Our interest in the application of this type of therapy to clinical allergy has been chiefly in the urticarial diseases.

Since the method of clinical trial is slow and tedious, we undertook a more direct approach to the problem by attempting to discover whether histaminase previously introduced into the body, either by oral administration, or by local injection, or by ionization, was capable of modifying the whealing which regularly follows the intracutaneous injection of histamine. With this in mind the following experiments were carried out.

Experiment No. 1. Into the skin of the forearm of 29 persons .05 - .1 cc. of a solution of 1-1000 histamine phosphate was injected. Ten minutes later the longest and shortest diameters of both the wheal and the flare were measured and recorded, and an accurate drawing of the reaction was made. Each of the 29 persons then took from 27 to 75 units of histaminase (Torantil) daily for three days. At the expiration of this time a corresponding site on the forearm opposite to the one previously chosen was selected and the same size dose of 1-1000 histamine phosphate was injected intracutaneously at a depth approximately the same as that employed in the first injection. The size of the resulting wheal and flare was measured as before and recorded.

Results: In these 29 persons the oral administration of large doses of histaminase for three days failed, with few exceptions, to alter in size or character the wheal and flare produced by a small intracutaneous dose of histamine phosphate subsequently given (table 1).

TABLE 1

Effect of histaminase taken orally on the histamine wheal.

Size of wheal in mm. after .1 cc. of 1-1000 histamine was administered intracutaneously.

No.	*Before histaminase*	*After histaminase*	*Dose of histaminase**
1	15 x 20	15 x 25	270 units
2	12 x 18	13 x 14	200 "
3	15 x 40	13 x 26	81 "
4	18 x 22	18 x 26	200 "
5	17 x 24	14 x 20	200 "
6	16 x 17	16 x 20	200 "
7	15 x 20	24 x 26	200 "
8	22 x 22	22 x 30	200 "
9	25 x 70	25 x 35	81 "
10	11 x 30	14 x 21	81 "
11	10 x 22	11 x 20	81 "
12	17 x 25	18 x 21	81 "
13	10 x 50	6 x 30	81 "
14	15 x 15	14 x 15	135 "
15	10 x 15	20 x 21	135 "
16	12 x 20	14 x 15	135 "
17	15 x 23	15 x 20	135 "
18	17 x 22	18 x 20	135 "
19	25 x 50	20 x 20	135 "
20	12 x 25	15 x 30	135 "
21	14 x 19	14 x 20	135 "
22	16 x 22	13 x 20	135 "
23	18 x 20	18 x 25	135 "
24	15 x 20	20 x 35	135 "
25	15 x 20	20 x 20	135 "
26	20 x 25	18 x 20	135 "
27	25 x 28	23 x 25	200 "
28	16 x 22	15 x 25	200 "
29	18 x 23	15 x 18	200 "

* The total dose was divided into three daily oral doses taken over a period of three days. Torantil, made by the Winthrop Chemical Company, was used.

In order to test further the possibility of altering the histamine wheal and flare by the previous administration of histaminase, a unit of histaminase was injected intramuscularly into the arm of 3 hospital patients on three successive days. When 0.1 cc. of 1-1000 histamine phosphate was then injected intracutaneously the size and appearance of the wheal and flare was identical with the previous controls.

A study of the effect of histaminase on higher dilutions of injected histamine was then undertaken. Into several local areas of the skin of the forearms of 3 normal persons histamine was injected in the following dilutions: 1-3000, 1-6000, 1-9000, 1-18,000, 1-36,000, 1-72,000, 1-144,000. The sizes of wheal and flare were measured and recorded. Each person then took by mouth 125 units of histaminase in nine doses spread over a period of three days. At the end of this period the skin injections with the same dilutions of histamine were repeated in approximately the same skin areas. Measurements

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(i) Roth, G. M. and Rynearson, E. H.: The Use of Histamine and Histaminase in the Treatment of Allergic Reactions to Insulin, Proc. Staff Meet. Mayo Clinic, Vol. 14, No. 23, June 7, 1939.
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(k) Nakoda, J. R.: Treatment of Duodenal Ulcer with Histaminase, Rev. Gast. Ent. 6:389, 1939.
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of wheal and flare were again made and recorded.

Results: Ingested histaminase produced inconstant differences in the size of wheal and flare when compared with control injections, irrespective of the dilution of histamine used (table 2).

TABLE 2.

Effect of histaminase on the wheal and flare produced by histamine in various dilutions*

Measurements of wheal (W) and flare (F) in mm.

Dilution		No. 1 Before	No. 1 After	No. 2 Before	No. 2 After	No. 3 Before	No. 3 After
1/3,000	W	15x20	16x18	15x15	15x15	15x20	16x18
	F	30x40	40x55	30x35	40x30	40x55	70x50
1/6,000	W	16x20	18x15	12x12	14x14	12x12	15x14
	F	30x40	40x40	35x35	35x40	50x40	50x45
1/9,000	W	15x14	15x18	10x10	7x8	9x10	13x12
	F	20x30	30x40	30x30	30x45	35x35	50x40
1/18,000	W	10x12	13x11	10x10	8x7	14x14	14x12
	F	25x25	30x40	25x30	45x40	40x42	35x35
1/36,000	W	5x5	14x13	12x12	7x9	12x14	10x10
	F	30x30	30x35	35x30	25x30	40x45	30x35
1/72,000	W	4x4	6x8	7x5	7x9	10x10	12x10
	F	20x30	32x35	35x30	30x30	25x30	35x40
1/144,000	W	4x4	7x5	7x4	5x4	7x7	8x8
	F	20x20	25x25	25x25	20x25	30x20	30x30
Control	W	4x4		4x4	4x4	5x5	4x4
	F	Neg.		20x20	Neg.	Neg.	Neg.

* The dose of histaminase was 135 units. The amount of histamine injected was .8 cc. The time between injections was three days.

Experiment No. 2. Into the forearm of 5 persons .1 cc. of 1-1000 histamine phosphate was injected intracutaneously, and the size of the resulting wheal and flare was measured and recorded. Into the skin of the opposite forearm 1/3 unit of histaminase was injected into three separate areas. At the expiration of thirty, sixty and one hundred and twenty minutes respectively .1 cc. of 1-1000 histamine phosphate was injected into each of these previously prepared areas, and the resulting wheal and flare was measured and recorded.

Results: In none of these cases was there significant alteration in the size or form of the histamine wheal produced at the site of previous histaminase injections when compared with the controls in the opposite arms.

Experiment No. 3. A small pad covering an aluminum electrode was saturated with 1-1000 histamine phosphate and placed over the skin of the forearm. Three milliamperes of positive current were passed through it for five seconds. In a similar way other areas of the skin were treated for fifteen, thirty, and forty-five seconds respectively. In each instance a wheal corresponding to the size of the electrode with a marked surrounding flare was produced. It was found that five seconds by this method was sufficient for the production of distinct whealing.

Substituting a buffered solution of histaminase for histamine phosphate a similar experiment was performed. Slight whealing occasionally occurred around the margin of the area in contact with the positive electrode when the time of application was one minute or more, but usually there was no reaction.

Solutions of one unit of histaminase and one milligram of histamine were incubated together for twenty-four hours at 37.5 C. One-tenth of a cubic centimeter of this solution failed to produce a wheal when injected intracutaneously. When the pad covering a small aluminum electrode was saturated with this same solution and applied to the forearm and a positive current of three milliamperes was passed through it for three minutes no wheal appeared.

An attempt was made to discover if the neutralization of histamine by histaminase, which occurred in the test tube after incubation, could be reproduced in the skin by introducing histaminase into it by ionization prior to ionization with histamine. To determine this an aluminum electrode covered with a pad saturated with histaminase (one unit to 2 cc. of phosphate buffer solution) was placed over the skin of the forearm at four separate marked areas and a positive current of three milliamperes was passed through each area for three minutes. After intervals of one, two, three and four and a half hours respectively a fresh pad-covered aluminum electrode, saturated with 1-1000 histamine phosphate, was applied successively to each of the four areas previously subjected to histaminase ionization. A current of three milliamperes was passed through each for ten seconds. The resulting wheals and flares were measured and compared with the wheal and flare of the control area in which a histamine saturated electrode pad was similarly applied without previous ionization of the skin with histaminase.

Results: In no instance did the previous ionization of an area of the skin with histaminase alter the size of the wheal which developed when histamine was carried into the skin by ionization.

Experiment No. 4. Into the skin of the forearm of 3 persons 1/10 unit of histaminase in buffered solution was injected[5]. One hour later a histamine saturated pad of a positive aluminum electrode was applied over the same area and a current of three milliamperes passed through it for thirty seconds. The resulting wheal and flare was measured and recorded and compared with a control wheal and flare previously produced by passing a current through a histamine saturated pad of an aluminum electrode of three milliamperes for thirty seconds. At the expiration of 100 minutes, 160 minutes, and 220 minutes respectively, other areas of the skin were similarly tested.

Results: In no instance was the wheal produced by ionization with histamine after the intracutaneous injection of histaminase smaller than the control wheals.

Conclusions

In none of the above experiments could it be demonstrated that histaminase previously administered orally or parenterally or by ionization modified in any respect whealing produced by the intracutaneous injection of histamine or its attempted introduction into the skin by ionization. In view of the recognized ability of histaminase to inactivate histamine after proper incubation *in vitro*, these failures suggest several possibilities: (1) The dose of histamine delivered into the skin in these experiments may have exceeded greatly the quantity ordinarily freed by tissue injury in allergic diseases. (2) The concentration of histaminase locally in the skin, even if other conditions for inactivation had been optimum, may have been inadequate for neutralization of the injected histamine. (3) It has been shown that an incubation period, usually twenty-four hours at 37.5 C., is necessary for the inactivation of histamine by histaminase *in vitro*. In our experiments the interaction of histaminase and histamine, to be effective, had to be immediate. The fact that there was no apparent neutralization of histamine in the experiments above reported suggests that, *in vivo* as well as *in vitro*, the time element may be an important feature of histamine inactivation by histaminase.

5. Inflammatory reactions follow intracutaneous injection of histaminase with redness, heat and swelling developing in twelve hours and lasting one or two days.

PSYCHIATRY AND THE SELECTIVE SERVICE

ELBERT A. MACMILLAN, M. D.

WINSTON-SALEM

The United States has launched upon a military era unprecedented in its history. For the first time in the nation's history a virtual war-time footing is being reached in a time of formal peace. The Selective Service Act of 1940 enables the government to mobilize man power in a manner that no peacetime regime has ever before seen in America. Countless problems are arising to harass Director Dykstra and his thousands of subordinates who are grubbing about madly in a renovated apartment house across Constitution Avenue from the War Department. The draft of 1917 was hurriedly put through, and many mistakes were made. Every effort is being made to profit by the errors of those stumbling, hectic days.

One of the most reliable measures of human intelligence is the ability to profit by experience, and some of the nation's best brains are now occupied constantly with efforts to apply the lessons learned in 1917-18 and subsequently.

This presentation is to deal with one tremendous problem raised by the Selective Service Act—that of recognizing in advance individuals who are intellectually, emotionally, or morally unfit for service in the armed forces. Lack of proper attention to this most vital problem in the previous draft has led to the population of army hospitals with thousands of men who for one reason or another cracked up mentally under the strain of military service. Military life requires that a man be able to live under discipline in close contact with a large and heterogeneous group of men. The costly experience gained in the World War indicated that the mental defective, the psychopath and the individual with any marked degree of personality defect are better left out of the service. Many of these people have learned to make some sort of adjustment to civilian life, even in many cases being able to support themselves. Inducted into the Army,

The author attended a symposium for psychiatrists of the medical advisory boards, held in Washington in January, 1941. Much of the information contained in this paper is based on material presented at this symposium, but no attempt is made to credit each source individually. It was urged upon the men in attendance at the symposium that they get this information before the examining physicians of the local boards in any way possible.

however, they have to meet service conditions which aggravate the handicap of some, and which may indeed deprive them of their previously possessed capacity to serve useful roles in civilian life.

In the seventeen years following the World War the government has expended $924,537,613 for the care of disabled neuropsychiatric cases which arose from our short participation. More than one half of the payments to disabled veterans since the war have been to those disabled by reason of some mental or nervous disorder. The importance of this for us now as we enter into a new phase in the military life of the nation is that by proper selection many of these unfortunates might have been screened out of the armed forces with resultant saving in expense, impairment to morale and general disorganization of civil and military life. It is perfectly obvious to us now that a large proportion of men who developed a gross nervous or mental disorder while in the military services in 1917-18 should never have been accepted in the first place. It has been said with that omnipotent wisdom of hindsight that 90 per cent of those affected by these disorders had shown some symptoms before being selected for the service. Fifty per cent had a history of mental illness in the family. Another fact gleaned from the records of the Selective Service Act number 1 is that we Americans seem to be in a class by ourselves in the incidence of mental disorders. Of the American casualties arising out of the World War about 50 per cent were found to be neuropsychiatric in nature. Of the somewhat more than a million British casualties, 20 per cent were of this type. Incidentally, it has been stated recently that 30 per cent of the British casualties at Dunkirk were neuropsychiatric. In the volunteer peace time army which this country has been supporting since the World War 17.52 per 1000 per annum became mental problems. It is said that when our present army reaches a strength of 1,500,000 3,500 beds will be needed constantly to care for the mental casualties. Of the 2,700,000 men in our 1917 draft army 78,000 were rejected for neuropsychiatric disorders, while about 95,000 additional men became disabled during service. North Carolina, by the way, was third in the forty-eight states during the World War in the incidence of both the major and minor defects.

In order to prevent some of the misfits who will be included in the draft during the next five years from reaching the service there is now being made a concerted effort to inform the draft boards, the examining physicians, and members of the Medical Advisory boards as to early manifestations of the conditions which have been found most troublesome. It was my pleasure to attend a recent meeting in Washington, called by Dr. Dykstra, Director of Selective Service, in which many of the problems were discussed; and it is clear that the greatest of efforts are being made and will continue to be made to prevent further waste and stultification of the service by men who are mentally or emotionally unfit to make soldiers.

To illustrate the gravity with which the authorities regard this problem, Medical Circular No. 1, issued by the Selective Service on November 7, 1940, as the first supplement to the routine medical booklet issued earlier, deals entirely with the psychiatric examination of registrants. The services of the William Allanson White Psychiatric Foundation have been enlisted for this work, and Dr. Harry Stack Sullivan, formerly of the Foundation, has now a full time position with the Selective Service Board.

What, then, may we regard as the qualities in a registrant which may be regarded as disqualifying? In the first place, in the interest of maintaining the optimum civilian morale, it is being emphasized that men are selected for military service because of positive qualities which make them good material, rather than that they are rejected because of unfitness. It is being further emphasized that the selection of men for the present service is not for immediate military service abroad, but rather in the interest of building up a reserve which will serve the country for ten years in the future. The burden is thus being placed upon the examining physicians and the medical advisory board psychiatrists of seeking assurance in their examination of a man, not only that he is in a state of mental and emotional balance at the time of examination, but that he is likely to remain in that state for the next decade. This is a large order, and one that of necessity cannot be filled in its entirety. But upon the relative success of this undertaking depends a great deal of the success of our challenge to the dictator nations.

Five types of mentally impaired individuals have been recognized as being unfit for military service (See Medical Circular No. 1). *Type I* is the group of mental defectives. These are the individuals who are so lacking in cerebral development as to be unable to comply with clear instructions. The school record often reveals poor learning ability, and in borderline cases a psychometric test is of benefit.

Type II. Besides those who are deficient in intelligence, there are individuals of average intelligence who are more or less incapable of profiting from experience. They are the constitutional psychopaths. They are egocentric, narcissistic, incapable of deep and sustained affection, and they constantly exhibit poor judgment. It has been said that the psychopath loves the limelight and can't stand prosperity. This type of individual is perhaps the most difficult for the examining physicians and psychiatrists to recognize. He is not adaptable to employment or to enduring group life and is totally disqualified for national service.

Type III. Major abnormalities of mood. This group includes the manic-depressive patients, many of whom are not patients at all, but men and women in all walks of life. The story is told of one officer during the World War who had once suffered an attack of acute mania but had apparently recovered completely. He remained an aggressive type, a good mixer, and a brave and excellent officer. This happy state of affairs was one day terminated quite suddenly when he commanded his batteries to be turned on his own men behind the lines. It was necessary to confine him with violence.

Type IV. The psychoneurotic disorders. These include the large group of hysterias, morbid anxiety, and hypochondria. Many cases of so called shell-shock during the World War are now recognized in retrospect as cases of hysteria. Many men who have obscure physical complaints, who ride sick-leave, who have always a tale to tell of some miraculous escape from the jaws of death are in this category. It is a gross error in judgment to believe that this type of man will be benefited by military service. His symptoms are much more likely to be aggravated.

Type V. The final category includes those with grave mental or personality handicaps. The suspicious, the "queer ducks", the morose, and the shiftless and nomadic fall into this group.

Perhaps the most prevalent misconception regarding the Army is that it possesses some miraculous power by which it is able to convert the town ne'er-do-well into a shining example of good citizenship, a man who after a three year stretch under the colors will come back home with all his faults erased. I have a suspicion that the Army has itself to thank in part for this lamentably erroneous premise. In days not so far removed from the present the business of being a peacetime soldier, especially a private, held no great inducement, and the Army has been known to make some rather exaggerated claims as to what it could do with the poor clay of civilian life. The Army still feels that it can do something for the physical development of its personnel, but it washes its hands of any responsibility for improving a man mentally or emotionally. Indeed, its leaders are now in the position of maintaining that army life will bring to light latent mental defects, and that an individual so afflicted may well leave the service in worse, rather than better shape in this regard. Lt. Col. William C. Porter has recently had to say on this subject: "The army is not a social service or a curative agency. There is no place in it for the physical or mental weakling."

It is the psychiatric belief now that there are many men in civilian life who fall in one or another of the five categories named above, who are getting along very well in some small sphere where they are well sheltered and protected. If the props are taken away from these men, as they are when they enter the military service, they crack very promptly, becoming often not only unable to continue in army life but even unable to return and take up the threads of their former lives. An individual who has been able to make his way in a small niche of society has been deprived of this ability, and has now very likely become a charge of the state.

Another group which has come to be considered totally unfit for military service are the alcoholics. The abuse of alcohol is almost invariably the result of the need of an individual for a prop, or a crutch to help ease the rough spots along the way. So it is not the drinking so much in itself that is

disabling, but the personality defect which calls for support. Dr. E. A. Strecker, Professor of Psychiatry in the University of Pennsylvania, has put it thus: A man begins the use of alcohol as a crutch to help him over the uneven ground in life. Instead of becoming stronger and finally able to put away the crutches, too often he comes eventually to the point where he must use them on the smooth ground as well as the rough. It has recently been decided, on the basis of an exhaustive study of 187 patients in St. Elizabeth's Hospital in Washington that any man who has been arrested on two occasions for drunkenness must be considered as unfit for military service. Certainly this is an arbitrary decision, and one which may deprive the Army of some good men, but those in charge seem willing to risk losing a few fit men by such a ruling rather than encumber the service by many who are unfit. Another arbitrary ruling has recently been made to the effect that any man who has been admitted to a hospital for mental and nervous diseases is not to be considered as fit material. This decision was made because of the expense and difficulty of obtaining records from mental institutions. Another general rule is to eliminate those who for any reason have proven an expense to society.

Because of the large number of men who have been found to develop some neuropsychiatric disorder early in their military service, and in the belief that these early breaks represent the culmination of mental difficulties which had arisen before military service began, the Army now refuses to accept responsibility for mental disorders which develop during the first six months of service. During the World War 10 per cent of neuropsychiatric ailments commenced on the first day of service, and 50 per cent commenced during the first year. As a matter of fact, the Army cannot so easily divest itself of the unpleasant obligations which arise when a break occurs. An effort is made to have the family take back the ailing member. The families so concerned have shown an understandable aversion to this solution of the problem, and the Army frequently finds itself stuck with the patient, ruling or no ruling.

It is worth while to consider some of the hazards to normal mental and emotional balance inherent in military service. The conflict over killing is perhaps one of the most significant of these factors. In civil life killing is antisocial, criminal, and opposed to all the tenets by which civilized man lives. In army life to kill is commendable, and training in the technique of killing is begun early in army life. It is not possible to reverse overnight an entire pattern of behavior, a code of morality which has been ingrained since early childhood. One of the thoughtful soldiers depicted in Ernest Hemingway's new novel "For Whom the Bell Tolls" is represented as suffering from recurring bouts with his conscience concerning the taking of human life. Certainly the conflict engendered by this primary feature of military life puts too great a strain on the adaptability of many persons.

Modern warfare has seen the introduction of new and more heinous threats to the mental balance of the soldiers concerned. The parachute troops, screaming bombs, machine gunning from low flying planes, terrifying tales of the horrors to be visited upon opposing armies — all these are a part of what has come to be known as "the strategy of terror", and are vitally important in the production of rapid increases in the incidence of the so called war neuroses. The first World War was the first war in which the terrific import of these conditions was felt. In the old days war was terrible, to be sure, but at its worst it had nothing to compare with the physical and psychic impact of a panzer division. No doubt as time goes on military experts will be able to allay much of the unreasoning terror which may be spread by the Hitler technique, but now we are in a stage of military development, or regression, in which psychological weapons are as deadly as those of iron and steel.

We admit, then, that it is desirable to keep mental unfits out of the military service; but what is being done to accomplish that end? In the first place, a large staff in Washington, headed by the previously mentioned Dr. Harry Stack Sullivan, is giving its undivided attention to the matter of disseminating information to draft board officials, medical examiners, and medical advisory board psychiatrists. One of the greatest problems now recognized is to get a proper proportion of the men coming up for examination into the hands of the psychiatrists. There are some six thousand local

draft boards in the country, a number which makes it virtually impossible that each man who is examined should have a proper psychiatric examination. Therefore the burden falls on the examining physician to recognize as nearly as possible all those who should have more detailed mental investigation. It has been reckoned that unless 5 per cent of all the men examined reach the psychiatrists by referral, some men who belong in the categories mentioned previously are slipping through the screen into the service. Of course, if unsuitable men are passed by the local board physician and advisory board psychiatrists, there is still the examination by the army induction board doctors. However, since these boards are called upon in times like these to do an almost superhuman amount of work, it cannot be expected that all earlier mistakes can be rectified here.

One factor in the screening out of undesirables is the proper assimilation of historical material concerning the registrants. It is certainly true that without such material, many who should be eliminated on past behavior will be missed. Certain cases of what have been called simple adult maladjustment will be missed unless some sort of social history is available. It has come to be the studied judgment of those who have given most time and attention to this problem that any case of doubt as to a man's mental qualifications should be resolved in favor of leaving him out of the service. It is better to miss a few men who would make good soldiers than to pick one who by reason of some handicap of temperament, personality or mental fitness might prove detrimental to morale or burdensome to the medical detachment. So we see that in the Selective Service Act of 1940 though there is a slight letting down of the bars in the matter of physical requirements, every effort is being made to elevate the standards in other respects. Even the long kicked-about problem of the differentiation of hysteria from malingering has lost much of its point, because, as one officer has put it recently, a man is just as much disabled by a self-inflicted bullet wound through the calf of his leg as by the hysterical paralysis of a leg. Though it has not been said in so many words, the impression is inescapable that the powers that be are willing to allow examining physicians to appear to be taken in by the wiles of the faker and malingerer and to pass up these men for active military service. Some other function can be found for them.

Indeed this leads to what is considered one of the most important of the functions of the psychiatrist in the choosing of men for the draft army. And this is in picking the right men to do the right work. In modern total war the dirty work must not all be done by the soldiers. In England now the front line is the clothes line in the backyard of the Welch miner or the Birmingham factory worker. In fact it is said that the armed services in Great Britain offer greater safety than any other occupation in that war torn land. There will be something for all of us to do in the days that are to come, and a young, single male may be put to many uses, only one of which is service in the armed forces.

Much research has been done in recent years on psychiatry, and several important contributions have been made, especially the development of nicotinic acid as a specific in the treatment of pellagra, and insulin and Metrazol shock therapy in dementia praecox. Sociological and anthropological advances have also been made.

Altogether the future holds hope, and there is reason to believe that if international sanity is some day restored, there may be a brighter and better day for the mental health of the individual.

The Physician as a Psychologist.—The physician must train himself to be a practical psychologist so that he may quickly fathom the unspoken reactions of the patient which are frequently more outspoken than uttered words but which may entirely escape the unwary. It is important that this appraisal be instantly accomplished for the ensuing procedure may be dictated by a fleeting impression. The ability to delve into the psychic reactions of the patient and often to anticipate unexpressed reactions is frequently referred to as intuition. It comprises no mystic powers but only the alert interpretation of subtle expressions, both uttered and unuttered. As the physician is usually the interrogator, he should always attempt to command this advantage. The approach to each patient necessitates a variation in technic and it is frequently important to engage the individual in general conversation before bluntly plunging into the presenting problem. Many times the alert physician obtains invaluable clues regarding the patient before a word of the individual's physical complaint has been stated.—F. A. Willius, M.D.: A Talk on the Science and the Art of Medical Practice, Proc. Staff Meet., Mayo Clinic, 15:649 (October 9) 1940.

ARTIFICIAL PNEUMOTHORAX
Supplemented With
THE PHRENIC NERVE OPERATION

ALLISON L. ORMOND, M. D.

BLACK MOUNTAIN

Pneumothorax

Dr. Clive Riviere of London has said[1], "No more hopeful ray of sunshine has ever come to illumine the darkened kingdom of disease than that introduced into the path of the consumptive through the discovery of artificial pneumothorax." Hippocrates, in his treatise "On Affections" about the year 490 B. C., suggested the injection of air into the chest for therapeutic purposes. In 1819 James Carson of England first urged the use of pneumothorax, after experimenting with induced collapse in animals. In 1821 Carson read before the Royal Society of London[1]: "Pneumothorax should be used in those cases with consumption in which the disease is placed in one of the lungs only: The remedy would appear to be simple, safe, and complete." "It has long been my opinion," he said, "that if ever this disease is to be cured—and it is an event of which I am by no means disposed to despair—it must be accomplished by mechanical means, or in other words by a surgical operation." He observed also that the lungs should be brought to a state of collapse by degrees only. This startling revelation seemed to have made no impression on the medical world, and the simple physiological principles were forgotten for sixty years.

In the interim between James Carson's revelation and Forlanini's scientific treatise on artificial pneumothorax, Laennec discovered and effectively applied principles of the stethoscope and the diagnosis of chest disease; Pasteur founded the science of bacteriology and gave a lasting contribution to surgery by his convincing proof that bacteria cause infectious disease; and Sir Joseph Lister introduced the use of antiseptics in surgery. Thus, Laennec, Pasteur, and Lister laid the foundation that enabled James Carson's dreams to be realized.

In 1882 Forlanini of Italy published his now famous scientific treatise on artificial pneumothorax. He accounted for the beneficial effects of artificial pneumothorax in these words[2]: "The lung shrivels—the lung no longer breathes—the lung that cannot breathe any more, cannot any more cough or expectorate." He recognized the necessity of frequent refills with small doses—the exact procedure that still proves most beneficial and effective—; the fact that adhesions prevent effective collapse; and the fact that lungs would re-expand by absorption of gas if refills were discontinued.

In 1898 Dr. John B. Murphy of Chicago reported before the American Medical Association his experience with artificial pneumothorax. He was the first to utilize this type of treatment in the United States.

One of the pioneer physicians in tuberculosis work was our own Dr. Mary E. Lapham, whose original exacting work in artificial pneumothorax at the now closed Highlands Sanatorium stands as a lasting monument to her name. In 1912 before the meeting of the National Association for the Study and Prevention of Tuberculosis in Washington, she reported her results from the use of artificial pneumothorax in the little Sanatorium in the mountains of North Carolina —the first work of this kind done in this state. Between 1910 and 1913 she published nine reports of her experience with pneumothorax[3]. Dr. Mary E. Lapham, who learned the technique in 1909 from Von Muralt of Davosdort, Switzerland, deserves much of the credit for bringing to the attention of the American physicians this most useful procedure.

The Phrenic Nerve Operation

Prior to 1902 the medical world believed that the diaphragm was such an essential organ of respiration that paralyzing the phrenic nerve would result in an immediate fatality[2].

In 1902 Schroeder dispelled this fear by crushing and dividing the phrenic nerve in dogs, and later in human beings while operating on goitres, without seriously interfering with respiration. The mechanical effectiveness of this procedure was quickly grasped

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1. Riviere: *Pneumothorax and Surgical Treatment of Pulmonary Tuberculosis.*
2. Alexander: The Collapse Therapy of Pulmonary Tuberculosis.
3. Warning, J. F.: The History of Artificial Pneumothorax.

by those groping for additional help in closing tuberculous cavities. At the present time the phrenic nerve paralysis is an integral part of the daily routine of all wide awake sanatoria.

In selected cases experience has shown that a phrenic nerve crush initiated early in the course of the disease will shorten the period of hospitalization. It is a grave and unforgivable mistake to try all patients first on a definite pre-determined length of bed rest, since 50 to 80 per cent of them need immediate supplemental collapse therapy. In the majority of patients the period of disability can be shortened by combining surgical rest with bed rest. Alexander says, "An early minor operation is at least as likely to be effective as a late major operation."

Very early after the induction of artificial pneumothorax we look for evidences of impending incomplete collapse. If such is observed we paralyze the phrenic nerve on that side as quickly as possible. Depending upon the indication, the nerve is temporarily or permanently paralyzed. The result is a paralysis of the diaphragm on the diseased side, which brings about the partial rest of the lung. Six to ten months after the temporary paralysis the function of the diaphragm returns. In the interim there has been sufficient time to determine the effectiveness of the operation, and a large proportion of good lung tissue is restored to functional usage.

Following the paralysis of the diaphragm the muscle tone is destroyed[4], the fibers of the central tendon lengthen and thin out, and the vault of the diaphragm rises into the thoracic cavity. The extent of the rise depends upon the presence or absence of adhesions; it often rises 5-10 cm., and even higher. Cavities often close quickly; sputum lessens and frequently becomes entirely negative; and toxic symptoms rapidly abate and oftentimes entirely disappear. The interval of subsequent refills of pneumothorax immediately following the operation is lengthened to 10-14 days, so that the diaphragm may be allowed to rise as high as possible with the minimum of resistance.

Artificial Pneumothorax and Phrenic Nerve Operation Combined

Doubt[5] has recently been thrown upon the value of collapse therapy in tuberculosis by two publications in the past two years. Drolet[6] demonstrated that the ratio of death to new cases in the United States has remained the same during twenty years, in spite of the increasing use of this form of treatment. Brand[7] in reports to the Joint Tuberculosis Council of England compared the results in a large pneumothorax group from forty-two different institutions with those of two large controlled groups. Comparisons made on the basis of ratios of actual to expected deaths failed to show an advantage for the treated cases.

Publications supporting more or less enthusiastically the results of collapse therapy of tuberculosis are too numerous to enumerate here. In 1935 the Committee on Artificial Pneumothorax of the American Sanatorium Association[8] reported the results of artificial pneumothorax in eighteen American institutions. Twenty-seven per cent of the cases were dead; 75 per cent of those living were able to work. The Committee concluded that the value of the treatment was demonstrated conclusively.

When we immobilize a tuberculous joint by applying a cast, there is almost always improvement. Improvement follows because the joint has been put at rest, thus limiting to a minimum the activity of the area involved and decreasing the dissemination of toxins. Again, experience has taught us that the greater majority of patients having tuberculous laryngitis can be benefited and many of them cured entirely by rest of the vocal cords. Collapse therapy in pulmonary tuberculosis utilizes the same principle in putting the lung at rest to control the tuberculous process more quickly and more efficiently.

The appalling death rate of the relentless Great White Plague is due in part to the failure of the laity and of a large proportion of the medical profession to appreciate fully the necessity of rest—and, in more recent years, rest by collapse therapy. Every measure at our command should be used as quickly as possible to close every cavity in every chest. The successful treatment of tuberculosis is measured by the closure of

4. Pottenger, F. M.: Tuberculosis in the Child and Adult.
5. Bosworth and Smith: Collapse Therapy in Pulmonary Tuberculosis, Am. Rev. Tuber. January, 1939.
6. Drolet, G. J.: Present Trend of Case Fatality Rates in Tuberculosis, Am. Rev. Tuber. 1938.
7. Brand, W.: The Results of Artificial Pneumothorax Treatment, Reports to the Joint Tuberculosis Council, England, February, 1937.
8. Peters, A., et al.: A Survey of Artificial Pneumothorax in Representative American Tuberculosis Sanatoria, 1915-1930, Am. Rev. Tuber. 1935, 31-85.

the cavity, with the disappearance of the tubercle bacilli from the sputum and the return of the patient to health.

The initial dose of air in artificial pneumothorax is 300 cc. The following day 300 cc. more is introduced into the pleural space. Thereafter the intervals between refills, and the amount of air given are determined solely by frequent fluoroscopic examinations. Small doses of air (from 250 to 300 cc.) at frequent intervals as originally recommended by Forlanini have proven beyond question to be the most effective procedure.

We use a 19 gauge needle 1½ inches long, with a window opposite the bevel. The comparative bluntness is an added protection to the lung and visceral pleura. The window affords an unobstructed entry of air into the pleural space.

Pneumothorax is continued for from four to twelve weeks before the supplemental phrenic nerve operation is considered. The use of this operation depends upon the decrease in the size of the cavity present. If there is a basal collapse with little or no effect upon an apical cavity, no time is lost in resorting immediately to the phrenic nerve operation. If multiple adhesions are noted adjacent to the cavity—particularly such as strings, cords or bands—or if the lung is suspended both from the apex and from the diaphragm, making it obvious that further increase in pressure might cause fluid formation, the phrenic nerve operation is done. Frequently, when there is much dissemination of caseous tuberculosis surrounding a cavity, thus offering more resistance to pneumothorax, a phrenic nerve operation is done not only to assist in closing the cavity, but to allay the toxemia as quickly as possible. A phrenic crush supplementing an inadequate pneumothorax in a patient with frequent hemoptysis almost always checks the hemoptysis. The results from this combined compression have been greater in cavities in the lower half of the lung than in apical cavities. Our best results have been obtained where cavities have been situated in or near the hilum of the lung. Their location near the hilum does not imply that they are central in the sense of being surrounded with healthy lung tissue. On the contrary the walls of many of these cavities are so closely situated in the vertebral gutter that they are widely adherent.

With this combined compression two resultant factors are obvious: the local mechanical effects and the removal of the toxemia. Mechanical effects other than that of closing the cavity are the inhibition of the growth of the tubercle bacillus by the diminution of oxygen and increase of carbon dioxide in the collapsed lung; the stimulation of fibroblastic proliferation by the lymph stasis; and the checking of the disease by walling in of the tuberculous area. The removal of toxemia is evidenced by the disappearance of symptoms: fever, sweat, malaise, wasting, and impairment of general health.

In the collapsed lung cavity walls unite, caseous areas become drier, the disease surfaces are reduced in area, fluid excretions are evacuated and can no more accumulate, and absorption is reduced to the minimum because of lymph stasis[1]. The lung is finally retracted to a firm, airless, fleshy mass; cavities and tubes are flattened out and their surfaces become adherent; and the diseased areas become permeated with dense fibrous tissue.

Phrenic nerve interruption was combined with pneumothorax in 95 cases. Fifty-two, or 54.7 per cent of these cases, are still in the hospital. The sputum was positive in 39 cases, or 41 per cent, and negative in 56 cases, or 59 per cent, following the operation. The sputum was positive in the entire group of 95 cases prior to the phrenic nerve interruption. It is interesting to note that in the highest number of cases the sputum becomes negative within sixty to ninety days following the supplemental phrenic nerve operation. The average number of days that elapsed from the initial dose of air to the phrenic nerve operation was 176 for the entire group; this includes a number of chronic cases of prolonged hospitalization. The average for those with negative sputum was 123 days. The average length of hospitalization for the entire group was 370 days; for the discharged group, 275 days. Out of the total group 86 cases, or 90.5 per cent, were classified as far advanced, and 9 cases, or 9.5 per cent, were classified as moderately advanced.

In the total group the phrenic nerve was crushed in 88 or 92.7 per cent of cases; it was evulsed in 7 or 7.3 per cent of cases. The operation was done on the left side in 51 cases, or 52.7 per cent, and on the right

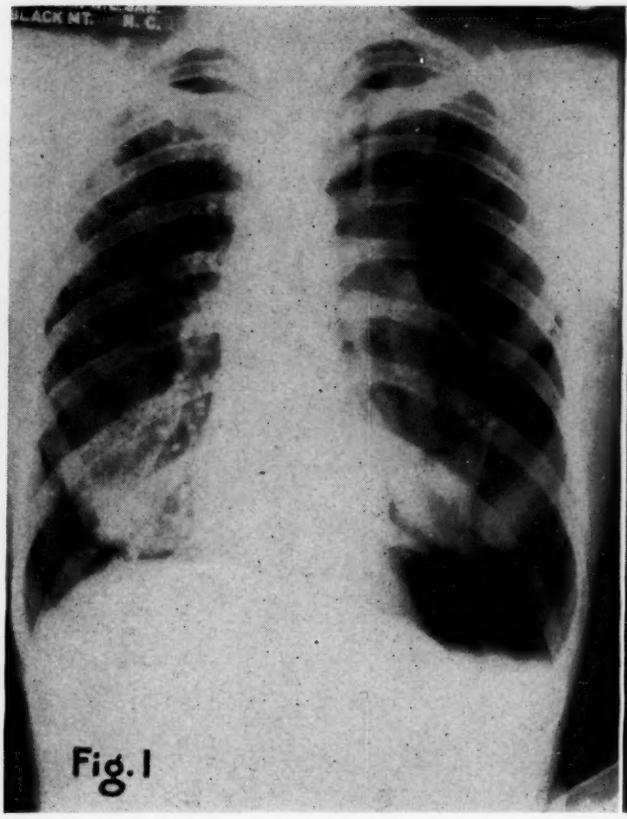


Fig. 1. Case 1, after the induction of pneumothorax and before the phrenic nerve operation was performed.

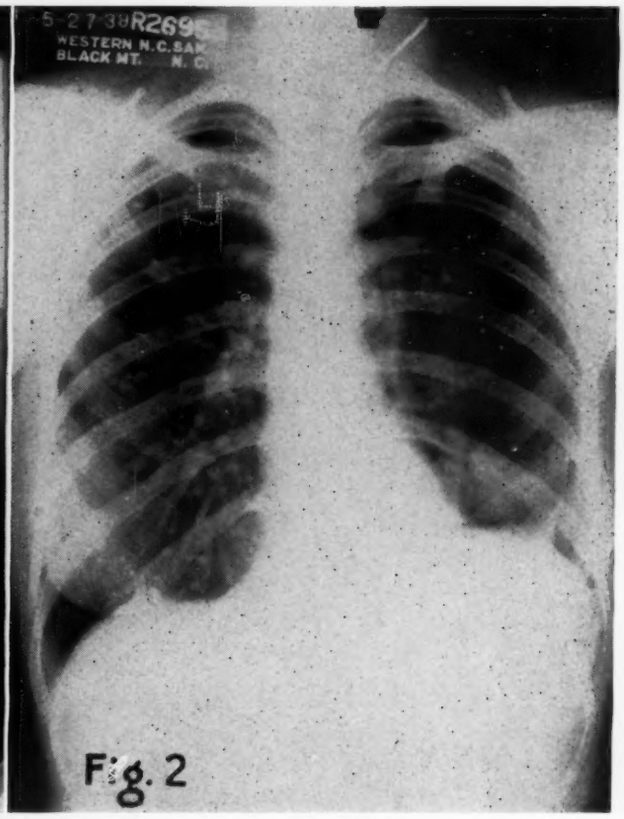


Fig. 2. Case 1, after the phrenic nerve operation was performed.

Note in this case the fifty per cent collapse on the left. The diaphragm is greatly pushed downward because of an effort to close the apical cavity by continued pressure. From the apex to the level of the sixth rib in the dorsal aspect there is a huge cavity present. Following the crushing of the phrenic nerve on the left there was marked rise of the diaphragm with the closure of the cavity.

side in 44 cases or 48.3 per cent. One accessory to the phrenic nerve was found in 79 cases, or 83.2 per cent; 2 accessories were found in 8, or 8.4 per cent; and none were found in 8 cases, or 8.4 per cent.

The average rise of the diaphragm was 3.5 cm. There was complete paralysis in 84 cases, or 88.4 per cent, and incomplete paralysis in 11 cases, or 11.6 per cent.

Of the 95 cases 74, or 77.8 per cent, were improved; 12, or 12.7 per cent, were quiescent; 4, or 4.4 per cent, were unimproved; and none were apparently arrested. Out of 74 cases improved, 19, or 25.6 per cent, have full time up or graduated walking exercise to ten minutes twice daily. Death occurred in 5 cases. A large percentage of the remaining 55 cases have a good chance of eventually improving to the quiescent classification. Consequently, it is apparent that out of 95 cases—37, or 38.9 per cent of which are still taking bed rest—the results have been good in 31 cases, or 32.7 per cent. Nine have had a supplemental closed pneumolysis, and 7 have had thoracoplasties. We feel that a large percentage of the 32.7 per cent who have been converted to the quiescent stage would eventually have had a thoracoplasty had it not been for the combined compression therapy utilized in these cases.

Case Reports

The following 8 cases are representative of the combined compression therapy of artificial pneumothorax supplemented with the phrenic nerve operation.

Case 1. Mrs. G. V.'s case was classified as far advanced C tuberculosis. She was hospitalized for fourteen months. The patient had pneumothorax for five months before admission, and because of the inadequate collapse (fig. 1) the phrenic nerve was crushed eleven days after admission. The sputum on admission was a Gaffky VIII. The sputum was negative exactly four months following the crushing of the phrenic

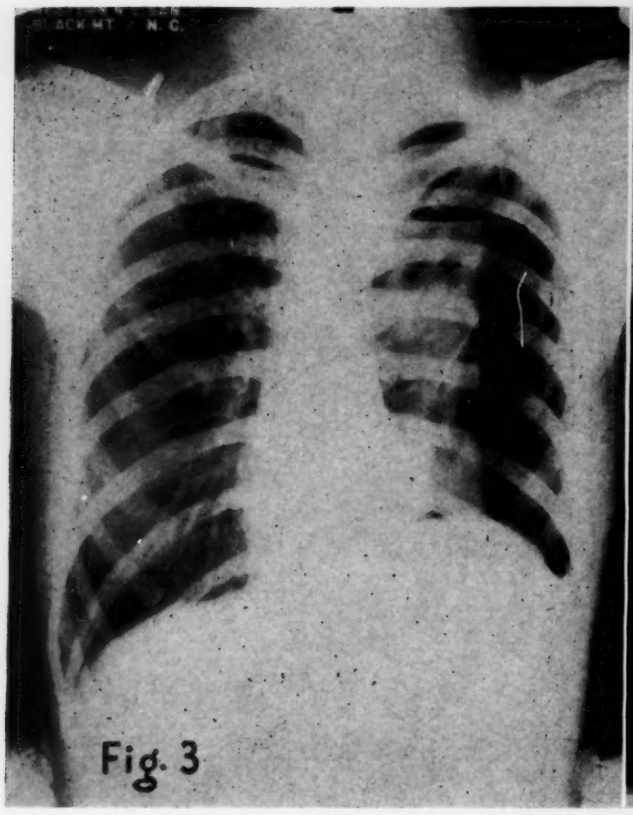


Fig. 3. Case 3, after the induction of pneumothorax and before the phrenic nerve operation was performed.

Note in this case the fifty per cent collapse of the left lung following the induction of pneumothorax. From the level of the apex to the fifth interspace in the dorsal aspect there is a large cavity due to tuberculous destruction. This cavity would not respond to pneumothorax. Following the crushing of the phrenic nerve on the left the cavity entirely disappeared.

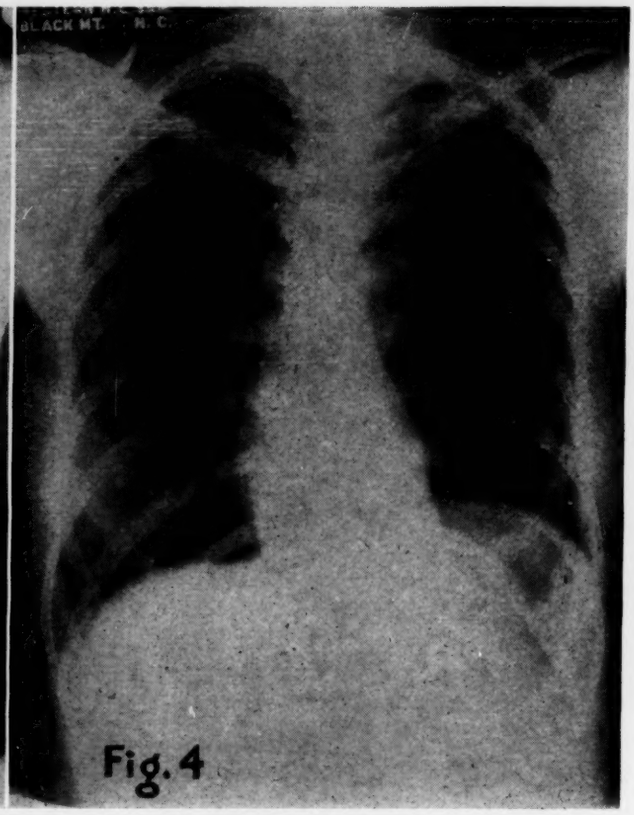


Fig. 4. Case 3, after the phrenic nerve operation was performed.

nerve, and the cavity had entirely disappeared (fig. 2). The patient was on twenty minutes walking exercise twice daily on discharge.

Case 2. Mrs. A. R. had tuberculosis classified as far advanced B. She was hospitalized for fifteen and one-half months. Pneumothorax was begun on the left on February 7, 1939. Because of an inadequate collapse a phrenic nerve operation was done twenty-four days later. On admission the sputum was a Gaffky VIII. Exactly five months and eight days following the phrenic nerve operation the sputum was negative and the cavity was entirely closed. The patient was on twenty minutes walking exercise twice daily on discharge.

Case 3. Mrs. M. M. W. had far advanced B tuberculosis. She was hospitalized for fourteen and one-half months. Pneumothorax was begun in February, 1939. Thirty-four days later a phrenic nerve operation was done because of an inadequate collapse (fig. 3). On admission the sputum was a Gaffky VII. Exactly six months following the crushing of the phrenic nerve the huge apical cavity was entirely closed and disappeared (fig. 4), and the sputum was negative. The patient now has time up.

Case 4. Miss K. R.'s case was classified as far advanced C tuberculosis. She was hospitalized for twenty-six months. Pneumothorax was begun on the right in February, 1938. Seven and one-half months later the phrenic nerve was crushed on the right side, the delay being due to bilateral artificial pneumothorax. On admission the sputum was a Gaffky VIII. Eleven months later the sputum was entirely negative and the cavity was entirely closed on both sides. The patient at the present time has time up and will soon be going to the dining room for her meals.

Case 5. Miss E. D. had far advanced C tuberculosis, and was hospitalized for twenty and one-half months. Pneumothorax was

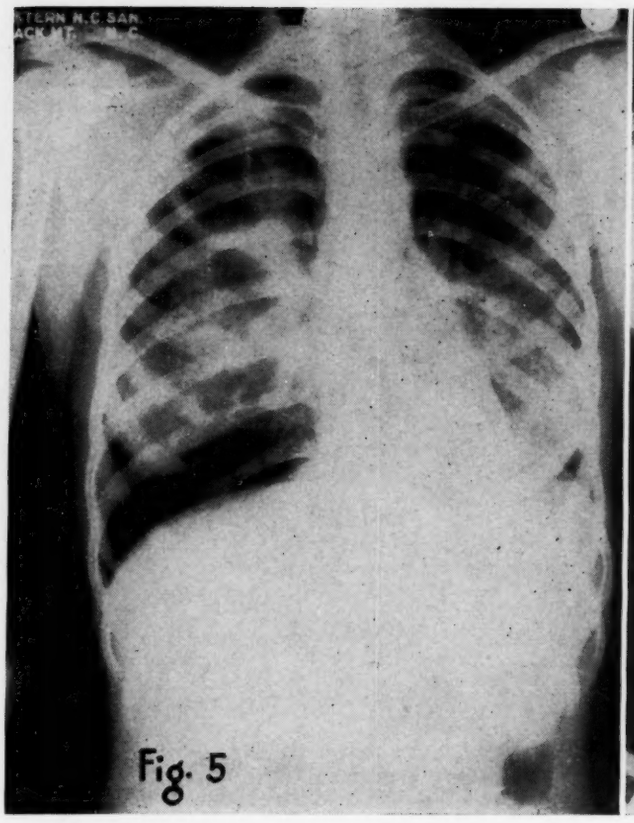


Fig. 5. Case 5, after the induction of pneumothorax and before the phrenic nerve operation was performed.

Note in this case the approximate forty per cent inadequate collapse of the right lung following sustained pneumothorax. From the level of the third to that of the sixth rib in the dorsal aspect there is a huge cavity. From the level of the sixth to that of the seventh interspace in the dorsal aspect there is another cavity. Following the crushing of the phrenic nerve both cavities closed entirely.

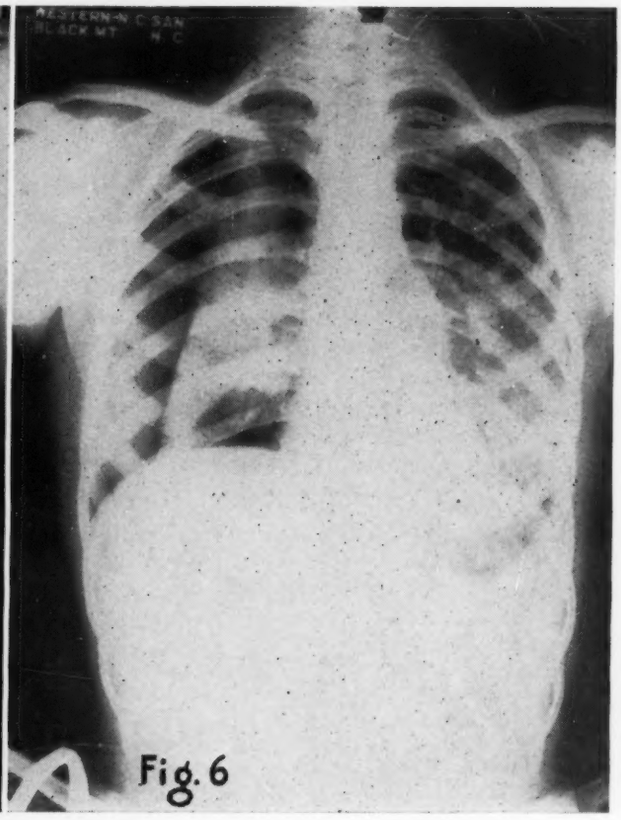


Fig. 6. Case 5, after the phrenic nerve operation was performed.

begun on the right in July, 1938 (fig. 5). Exactly two months later the phrenic nerve was crushed on the right side. On admission the sputum was a Gaffky III. Seven and one-half months following the phrenic crush the cavities were entirely closed (fig. 6) and her sputum was negative. The patient now has time up and will soon go to the dining room for her meals.

Case 6. Mrs. O. F. had tuberculosis classified as far advanced C. She was hospitalized for twenty-two months. Pneumothorax was begun in February, 1938. Three and one-half months later a phrenic nerve crush was done because of an inadequate collapse. On admission the sputum was a Gaffky VI. Six months later the sputum was still Gaffky V, and the cavity remained open. It was necessary to do a three stage thoracoplasty to render the sputum negative for tubercle bacilli. The combined compression therapy of pneumothorax and phrenic nerve crush was a complete failure in this case.

Case 7. Mrs. L. F. S. had far advanced B tuberculosis, and was hospitalized for five and one-half months. The patient took pneumothorax for five months prior to her admission. The phrenic nerve was crushed nine days after her admission to this hospital. On admission the sputum was a Gaffky VIII. Exactly one month and eighteen days following the phrenic nerve operation the sputum was entirely negative and the cavity was closed. The patient was discharged, with twenty-five minutes of walking exercise twice daily.

Case 8. Miss V. L.'s case was classified as far advanced C tuberculosis. She was hospitalized for forty months. Pneumothorax was begun on the left on July 27, 1935. A phrenic nerve operation was done one and one-half months before the beginning of artificial pneumothorax, while the patient was waiting for hospitalization. On admission the sputum was a Gaffky VI. Exactly fifteen months later the sputum was negative and the cavities were closed. The patient was discharged from the hospital with

fifteen minutes of walking exercise twice daily.

You will note that every case here presented is classified as far advanced B or C. These cases were purposely selected to show that the combined compression therapy utilized here is and has been a worthy combination compression in many cases. Two of these cases were apparently hopelessly ill upon admission, but persistent compression with the combined therapy here applied has been sufficient to get them back on their feet again.

Abstract of Discussion

Dr. H. L. Seay (Huntersville): Up until the last few years the National Surgeons Organization have been more or less divided as to the value of the phrenic nerve paralysis. In the last two years I believe we have about come to the actual truth of the matter.

It seems to me that the best results in this country have been reported from the large city clinics or state clinics where a great many early cases are seen; and the poorest results have come from health resorts where chronic and far advanced cases often predominate. I think the problem today is one of selection of cases. We all admit, I think, that the operation does produce desirable results in certain cases. We know, as Dr. Ormond pointed out, that it very frequently shortens the period of hospitalization. In many cases it brings about a closure of cavities, lessens the sputum, and reduces or cures the toxemia.

Dr. Ormond pointed out that pneumothorax is usually used about four to twelve weeks before a phrenic nerve operation is done. He also indicated that pneumothorax refill is usually increased immediately after an operation. In that connection I would like to point out that the consensus of opinion is that negative pressure pneumothorax doesn't materially interfere with the rise of the diaphragm, whereas positive pressure pneumothorax does.

In connection with the actual rise of the diaphragm, I would like to ask Dr. Ormond what method he uses in measuring the rise. Dr. Kennedy and I have been using Alexander's procedure of measuring from the highest point of the dome of the diaphragm up to the horizontal line drawn along the upper margin of the first transferred pleural space. I do not think you can always determine the result from the actual rise of the diaphragm. I am sure all of us doing this work have seen cases in which there was a very marked rise and a very poor result. On the other hand, a very slight rise of the diaphragm, provided there is a complete paralysis of the muscular structure, may give a very desirable result—a large cavity may be closed.

In the literature, I think the results have been most favorable with thoracic cavities. The statement is made that apical and basal cavities are about equally susceptible to closure. Dr. Ormond in his series shows that better results were obtained with cavities in the lower half of the lung than in the apex, and his best results were with cavities in or near the hilum. In our small series at Mecklenburg Sanatorium the results follow his very closely.

I would like to ask one other question. What per cent of his cases had cavities and what per cent of the cavities were actually closed by pneumothorax supplemented with a phrenic nerve operation? John Alexander reported a series some time ago of 116 cases, in 69 of which the cavities were closed, a percentage of 59. He followed this series of 69 cases and found that 23 per cent were arrested in a few months or a year and 59 per cent became quiescent.

Dr. A. L. Ormond (Black Mountain): Dr. Seay has asked what method we utilized in determining the rise of the diaphragm. In about 20 or 25 of these cases we actually measured the rise of the diaphragm according to Dr. Alexander's method of which he spoke. I did not have any definite scientific means of determining the rise in the rest of the cases. We obtained an average of 3.5 cm. in those we did measure.

He also asks how many of these 95 patients had cavities. I'm not able to answer that. I do know that we rarely ever do a phrenic nerve operation on a pneumothorax case that does not have a cavity, and possibly the entire group of 95 had cavities. There may have been two or three that did not.

In the very short period of time we have had at the Western Sanatorium to carry on our work, our results with this therapy have been beyond our expectations. In fact our best results have been obtained with pneumothorax followed with the phrenic nerve operation. We guessed in the beginning that we would obtain good results in about 25 per cent of these cases, but the actual percentage was 38.3. We feel that many of these patients with far advanced tuberculosis have been definitely benefited, and would have come to a thoracoplasty had it not been for the combined compression therapy utilized in these cases. I would much rather take a chance with a phrenic nerve operation than to lose my ribs entirely.

Treatment of older patients suffering from tuberculosis is one of our major problems in the eradication of the disease. A third of the patients in sanatoria are over forty years of age. Temporary forms of collapse treatment in older patients are less apt to be successful than the permanent form provided by thoracoplasty. One-hundred-sixty-two patients between the ages of 40 and 65 treated by thoracoplasty showed improvement of 84 per cent, with 35 per cent returning to work.—Richard H. Overhold, M.D., Amer. Rev. of Tuber, Feb., 1940.

The proper treatment of living cases of tuberculosis is fortunately also the humane, the scientific, and the effective method for its prevention. The proper care of the sick secures the protection of the well. Homer Folks, 6th Inter. Tuber. Congress, Sept., 1908.

War . . . makes pleasant news for the tubercle bacillus. As the deaths from T.N.T. increase, those from tuberculosis lag not far behind. In the World War all countries showed this phenomenon whether under arms or not. What effect on our efforts to eradicate tuberculosis will these grim months ahead bring forth? . . . Unless we find a way to redouble the offensive against our hidden enemy, the sad story of twenty years ago will be told again and we will find ourselves facing a record of lost ground. Kendall Emerson, M.D.

THE USE OF NEOPRONTOSIL IN IDIOPATHIC ULCERATIVE COLITIS

Report of Two Cases

W. RANEY STANFORD, M.D., F.A.C.P.
Watts Hospital
and
LOUISE McMILLAN, B.S., *Technician*
DURHAM

It is the purpose of this paper to describe the treatment of two cases of idiopathic ulcerative colitis with neoprontosil. There are several theories regarding the causative agent in this disease, but the view held by most clinicians is that a streptococcus organism is the inciting factor. This organism has been isolated directly from rectal lesions, and in some instances of severe fulminating disease, from the blood stream. While this is the generally accepted theory, some investigators have considered a deficiency of vitamins, minerals, and some of the food stuffs as of direct etiological significance.

Report of Cases

Case 1: Mrs. A. E. B., aged 30 years, came in complaining of having blood and mucus in her stools. Her history dated back four or five years. She stated that she had been constipated and had been passing mucus during this period, but for the four or five weeks prior to admission to the hospital she had been passing some blood as well as mucus. This had been most noticeable in the morning. The bowels had remained constipated most of the time; however, she had had some diarrhea. She had had fifteen stools the day she was admitted to the hospital. Frequent stool examinations for ova and parasites had been made, but all were reported negative. There was no history of tuberculosis or cancer in the family. The rest of the history was not remarkable.

Physical Findings: The patient weighed 121 pounds when she was first seen—7 pounds less than her normal weight. There was some seborrheic dermatitis over the body. The heart and lungs were normal. The sigmoid was palpable. The rectal examination showed the anal canal to be entirely normal. The rectum was empty, and no masses were felt. The proctoscopic examination showed the mucous membrane to be very red, injected and bleeding. A quantity of free pus was noted. The bowel seemed to be quite spastic. X-ray examination of the stomach and colon was negative.

Dr. Julian Ruffin, of Duke University was called into consultation. He gave as his impression "Idiopathic ulcerative colitis of long standing. Proctoscopic examination shows granular friable mucosa with pin-point ulcers."

Laboratory Findings: The urine was negative. The hemoglobin and white cell count were checked practically every day of the patient's stay in the hospital. The leukocyte count ranged from 6,450 to 13,800. The hemoglobin ranged from 70 per cent to 90 per cent. The day she was discharged, the hemoglobin was 90 per cent and the white cell count was 7,900. The stools showed much mucus and were positive for occult blood for the first eight days after admission. The stool culture was negative for typhoid and dysentery bacilli. No ova or parasites were found; no amebas were found. The sedimentation rates were normal. The basal metabolic rate was minus 12.

Course While in the Hospital: The patient was admitted to Watts Hospital on March 14, 1940. During the first two days of her stay in the hospital her temperature went as high as 100 F. For the first two weeks she had four to six stools a day, containing much blood and mucus. During her third week in the hospital her temperature ranged from 100° to 102°. This temperature continued into the fourth week, with a pulse rate of 85 to 125. Numerous therapeutic agents were tried, including large doses of Vitamin B_1, liver extract, and transfusions, none of which seemed to do any good. She steadily grew worse. On March 26 she was put on sulfanilamide by rectum and by mouth. While she was getting this drug her course downward seemed to be much more rapid. On March 30 sulfanilamide was stopped; on this date her temperature reached 102°, and her condition was very poor. On April 4 she was given neoprontosil, 15 grains three times a day for the first day. On the next day the neoprontosil was increased to 25 grains three times a day. On April 7, her temperature dropped to normal and remained practically normal during the remainder of her stay in the hospital. Following April 5, she did not have more than four stools a day. She improved steadi-

ly almost from the time the neoprontosil was begun. She received 75 grains of neoprontosil a day for five days, and then the dose was cut to 60 grains a day. This was continued for four more days. When the patient was discharged from the hospital on April 17 she was taking 30 grains of neoprontosil a day. This was gradually cut down, and was discontinued after three days. The patient weighed 107 pounds when she was discharged. On May 20, she stated that she was having only one stool a day, and was feeling better than she had in years. On June 1, 1940, she went back to work. At this writing her stools still show some mucus, but no blood. All weight loss has been regained.

Case 2: B. A. H., a white male, aged 41, had had undulant fever in the summer of 1939. He made a good recovery and did well until May of 1940, at which time he came into the office, with a slight fever, and complaining of frequent bowel movements. He had lost 4 pounds in four weeks. He had been receiving adequate vitamin therapy since his attack of undulant fever. He gave a history of attacks of alternating diarrhea and constipation dating back four years. His physical examination at this time showed the following findings: The heart was not enlarged, the rate was regular, 108, with no murmurs. The abdomen was soft, and the cecum was thickened and large. The sigmoid was quite spastic. There was no hernia, and no other abnormalities were noted. Proctoscopic examination at this time showed a very spastic anal canal; the mucous membrane was red and showed some punctate spots which looked like small ulcers. No large ulcers were seen. There was a small amount of blood in the stools.

On May 13, the patient was put to bed and was given 75 grains of neoprontosil a day. He ran a fever until June 1, the highest temperature (101.8°) occurring during the first three days. His temperature gradually came down, and after June 1 was normal. From that day on he showed marked improvement. On June 8 he went back to work, and the neoprontosil was stopped on June 10. It had been gradually cut down so that for the last several days he was taking only 30 grains a day. On June 16, he reported normal stools. A weight loss of 6 pounds during therapy has been regained. It should be stated here that in the acute stage of this disease this patient showed a very marked odor which could be easily detected all over his room.

Comment

Both of these patients were given liver extract, Vitamin B_1 and nicotinic acid, and were kept on a bland diet during the course of their illness. Their blood pictures were watched carefully, especially the hemoglobin and white cell count. There was no tendency toward leukopenia or anemia. Proctoscopic examinations on both of these patients after the administration of neoprontosil showed much improvement.

As was noted, we tried sulfanilamide on one of these patients, and we found, as did Brown and his associates[1], that it was too toxic. In their search for a drug of lower toxicity, they decided that neoprontosil might be the drug of choice. They gave from 4 to 5.5 Gm. a day orally divided into five equal parts. This was given for a period of ten to fourteen days. In the more stubborn cases subsequent courses were given. Usually they had a fourteen day rest period between courses. These investigators do not believe that the effect of neoprontosil is due entirely to the sulfanilamide contained, but that neoprontosil possesses an action which is wholly independent of that of the sulfanilamide.

Conclusion

It seems to us that neoprontosil is of definite value as a therapeutic agent in idiopathic ulcerative colitis. It caused no toxic manifestation in these cases. While the results in these two cases do not prove its value as a therapeutic agent in this condition, they do justify its continued trial.

1. Brown, Alex E., et al.: Neoprontosil (Oral) in the Treatment of Chronic Ulcerative Colitis, *Ann. Int. Med.* 13: 700-714 (October) 1939.

The All Important Question. — A patient usually consults a doctor because he is conscious that there is something wrong with him. The important thing to the patient is this question, "What bearing has the cause of my symptoms upon my future?" When the physician accepts a patient, he should accept the serious responsibility of answering this question to the best of his ability. From talks with many laymen, I feel very sure that people greatly desire physicians who will listen patiently to their complaints and then thoughtfully evaluate the symptoms and physical findings in the light of past study and experience in an honest attempt to answer this all important question. — Warner S. Bump: Medical Opportunities in a Small Urban Community, Wisconsin Medical Journal 39:978 (November) 1940.

FORCEPS DELIVERY

O. HUNTER JONES, M. D.

CHARLOTTE

There are three factors concerned in forceps delivery:

(1) The indication for forceps.
(2) The selection of the proper forceps.
(3) Technique in the use of the forceps.

In this paper I shall attempt to answer the question as to how often forceps are used, and to discuss the various factors concerned in the technique of forceps delivery. I have reviewed 100 consecutive unselected viable births from my private practice as a basis for discussion. This small series offers merely an approach to the subject, and is presented as such.

TABLE 1

100 Consecutive Unselected Viable Births

Primiparae	66	
Multiparae	34	
Breech presentations	5	
Vertex presentations	91	
Cesarean sections	4	
Forceps deliveries	73	
Episiotomies	73	
Cervix inspected	54	
Maternal morbidity	5	(Corrected—2)
Maternal mortality	0	
Fetal mortality	2	(2%); or fullterm 1 (1%)
Birth injuries	0	

Type of Delivery

Of the 100 cases, 4 were cesarean sections; 5 breech deliveries; 91 vertex deliveries.

Parity, Length of Labor

There were 66 primiparae and 34 multiparae. The average length of labor (first and second stages) was approximately thirteen hours for the primiparae and approximately nine hours for the multiparae.

Forceps, Episiotomy, Inspection of Cervix

(1) There were 73 forceps deliveries. These will be discussed in detail later.

(2) Episiotomy was done in 73 cases.

(3) The cervix was inspected in approximately one-half of the cases. Whenever a laceration of sufficient degree was present it was repaired. At some future date, when enough data have been collected, I expect to make a complete report. However I will say that frequent inspection of the cervix thus far has shown that, while bleeding is the only sign of a lacerated cervix, yet bleeding is usually slight, rarely spurts, and is frequently absent entirely, so that without inspection of the cervix many lacerations will be overlooked.

Maternal Morbidity and Mortality

The morbidity standard used was that advocated by the American Committee on Maternal Welfare—namely, a temperature of 100.4 F. or over on any two days after the first twenty-four hours. By this standard there were 5 cases of morbidity, exclusive of the cesarean cases; the corrected morbidity (omitting the breast and respiratory and genito-urinary tracts) is 2 (2 per cent), with a total of five days' morbidity. The mercurochrome technique (vaginal instillations during labor, as advocated by Mayes) was followed in all cases. One cesarean showed a morbidity.

There were no maternal deaths.

Fetal Mortality

There were two fetal deaths.

One was in a premature infant (7-7½ months), following a spontaneous delivery. The baby lived six hours. Autopsy revealed atelectasis of the left lung.

The other death was due to intracranial hemorrhage in a full term infant. The delivery was a difficult high midforceps. The baby lived sixty hours.

This gives a fetal mortality rate of 2 per cent for the 100 cases, if all viable births (7 months or more) are included; but if only full term births are included the mortality rate is 1 per cent. If only the forceps group is considered, the mortality rate is still 1 per cent.

There were no birth injuries (except probably in the high midforceps delivery described above).

X-ray Studies

X-ray studies were made in 13 cases, or approximately 20 per cent of the primiparae. The technique of Caldwell and Moloy was followed. This consists of anteroposterior stereos, a large lateral, and a film showing the subpubic arch. Perhaps the day is not far off when the obstetrician will be able to

Read before the Section on Gynecology and Obstetrics, Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

include x-ray study as a routine procedure for every primipara.

As originally pointed out by Caldwell and Moloy, the experience of those, including myself, who use this technique has been that stereoroentgenography is a great aid in the management of patients requiring operative intervention, and in selecting the best type of operative procedure[1]. In cases requiring forceps, this method reveals the danger of using a routine forceps procedure, except in dealing with pelves of similar shape. It shows the most advantageous pelvic diameters for traction and the proper levels at which to attempt rotation, and as a result reduces the frequency of difficult forceps delivery. It helps to explain many cases of dystocia.

TABLE 2

X-ray study was done in 13 cases (20% of the primiparae).

Engagement:
(Determined by abdominal, vaginal, and rectal examination, plus x-ray studies in 13 cases)
Transverse position 64%
Anterior position 21%
Posterior position 15%
Analyzed:
LOA 4 times as often as ROA
LOT and ROT approximately the same number
ROP twice as often as LOP

Findings of Caldwell and Moloy

Engagement:
(Determined by x-ray)
Transverse position . . . . . 60 %
Anterior position 21.5%
Posterior position 18.5%
Analyzed:
LOA slightly more than ROA
LOT twice as often as ROT
LOP and ROP approximately the same number

Engagement

Although the diagnosis of position in my 100 cases was made by abdominal, vaginal and rectal examination, with x-ray studies in only 13 of the cases, the percentages compare very favorably with those of Caldwell and Moloy[2], who used x-ray in several hundred cases. I do not know how to explain the greater variation of the positions in my cases, except that x-ray diagnosis is more accurate.

Before going into a discussion of the forceps groups, I would like to review the interesting statistics compiled by Dr. H. C. Miller[3] of the Pediatric Department of the Yale Medical School, and presented to the American Congress on Obstetrics and Gynecology, at Cleveland, last September.

Total Mortality (Stillborn and Neonatal) According to Method of Delivery (Miller)[3]

	Fullterm and Premature (7 mos. or more)			*Fullterm Only*		
Type of Delivery	*Total Births*	*Total Fetal Mortality*	*Per Cent*	*Total Births*	*Total Fetal Mort.*	*Per Cent*
Spontaneous	1844	43	2.3	1710	16	0.9
Low forceps	580	8	1.3	557	3	0.5
Mid forceps	200	10	5.0	191	9	4.7
High forceps	19	2	10.5	17	1	5.8
Breech extraction	76	14	18.3	58	10	17.2
Version-extraction	76	25	32.8	63	20	31.7
Cesarean section	415	25	6.0	365	7	1.9
Total	3210	127	3.9	2961	66	2.2

Upon analysis one finds that the baby delivered by low forceps has a better chance of survival than the baby delivered spontaneously. Note that if only fullterm infants are considered, there is little difference between the spontaneous, low forceps and cesarean mortality. Note the extremely high mortality in the breech group, and in the version group.

TABLE 3

Forceps deliveries	73	(76%)
Outlet	60	(82.2%)
Prophylactic	47	
Low	13	
Mid	9	(12.3%)
After-coming head	4	(5.5%)
Mid-forceps group	9	
(a) Low mid-forceps	6	
Transverse arrest in low midpelvis	4	
Occipito-anterior arrest in low midpelvis	1	
Occipito-posterior arrest in low midpelvis	1	
(b) Mid-forceps		
Transverse arrest in midpelvis	2	
(c) High mid-forceps		
Transverse arrest in high midpelvis	1	

Outlet Forceps (Prophylactic and Low)

Forty-seven forceps deliveries were classified as prophylactic and 13 as low. Many obstetricians prefer to call the entire group the low or outlet forceps deliveries. Others make a differentiation. In a low forceps delivery the head is at a slightly higher level and requires slightly more effort for delivery than in a prophylactic forceps delivery. DeLee[4], who introduced the term

1. Walsh, John G.: Stereoroentgenography of 400 Pelves With Clinical Correlation, Am. J. Obs. and Gyn. 39:255 (February) 1940.
2. Caldwell, W. E.; Moloy, H. C., and D'Esopo, Anthony D.: A Roentgenologic Study of The Mechanism of Engagement of the Fetal Head, Am. J. Obs. and Gyn. 28:824 (December) 1934.
3. Miller, Herbert C., in Western Journal of Surgery and Obstetrics and Gynecology 48:13.
4. DeLee, Joseph B.: The Principles and Practice of Obstetrics, ed. 6, Philadelphia, W. B. Saunders Company, p. 1047; The 1938 Year Book of Obstetrics, Chicago, Year Book Publishers, p. 295.

"prophylactic forceps" in 1920, describes it as ". . . easily lifting the head out when it has come down onto the perineum. . . and it is associated with an episiotomy which is done when the head begins, just begins, to part the pillars of the levator ani; then and not before, or long after, an episiotomy is performed—in depth varying with the estimated size of the baby."

Prophylactic forceps and episiotomy are employed: (1) to prevent destruction of the fascial and muscular support of the pelvic floor and bladder, and of the supporting structures of the uterus; (2) to prevent the nervous and physical exhaustion produced by a prolonged second stage; (3) to decrease postpartum bleeding from a tired uterus; (4) to reduce the time the baby's brain is under pressure[4].

Schreiber[5], a neurologic surgeon, has shown that cerebral asphyxia (oxygen deficiency) at birth may cause permanent degenerative changes in the brain. Surely this warning should be foremost in the mind of every obstetrician as he follows labor through and prepares for delivery.

Mid Forceps

There were 9 cases classified as mid forceps deliveries. Upon analysis one finds that only three of these cases are mid forceps in the true meaning of the term.

Transverse arrest of the fetal head (failure of the head to rotate to the anterior position), requiring forceps rotation occurred 7 times—4 times in low midpelvis, twice in midpelvis proper, and once in high midpelvis. Correction was as follows:

(1) Rotation was accomplished easily in the low arrest group by use of the Barton forceps, after which delivery was completed with outlet forceps.

(2) One case of an arrested anterior position in low midpelvis required axis traction forceps for delivery. The head was held up by an abnormally prominent coccyx, which had to be snapped. Delivery was easy after this was done.

(3) Arrest in low midpelvis in the occipitoposterior position occurred one time, in an anthropoid type of pelvis. The Scanzoni "double application" of forceps was employed, using Tucker McLane smooth blade forceps for rotation, which was accomplished after traction to a lower level, and delivery was completed after reapplication of the blades. Another case of persistent occipitoposterior position, occurring in an anthropoid pelvis, was delivered *as such*, with prophylactic forceps. In this case, the head descended onto the perineum in the posterior position, where attempted manual rotation was unsuccessful. Delivery in the posterior position was easy. Both these cases are typical of the mechanism one has to follow in delivery through the anthropoid pelves to avoid trouble.

Bill, of Cleveland, has modified the Scanzoni technique, in that he rotates through a wide arc without traction.

Caldwell and Moloy[6] have pointed out that in the android pelvis, if converging side walls or a backward sacrum exists, arrest in the occipitoposterior position may occur. One should try manual rotation to the transverse position, then apply Barton forceps, and complete rotation *only* after bringing the head to a lower level, or at times elevating it to a higher level.

Two cases of low transverse arrest were rotated manually, and then delivered by low forceps. Some obstetricians are quite expert at the art of manual rotation. Dr. Harry Mayes, of the Methodist Episcopal Hospital in Brooklyn, N. Y., is quite adept at rotating with one blade of the forceps combined with manual rotation. I used this technique successfully in one case of the series. However, in the low transverse arrest it has been my experience that rotation can be accomplished more easily and more completely with Barton forceps than manually. Manual rotation not infrequently results in incomplete rotation. I want to emphasize the fact that in the low arrest cases I have not found that the Barton forceps causes damage to the maternal soft parts. On the other hand, the higher the level at which forceps are necessary, the greater the chance of injury to the maternal soft parts, and to the fetus.

The two cases of transverse arrest in midpelvis proper were rotated with Barton forceps, after traction to a lower level, and delivery was completed with axis traction forceps. It should be emphasized that if arrest occurs in the android pelvis, it is very important to maintain the transverse position to a lower level before rotating.

(3) The one case of transverse arrest in

5. Schreiber, Frederic: Apnea of the Newborn and Associated Cerebral Injury, J.A.M.A. 8:1268 (October 1) 1938.

6. Caldwell, W. E.; Moloy, H. C.; D'Esopo, Anthony D.: Studies On Pelvic Arrests, Am. J. Obs. and Gyn. 36:928 (December) 1938.

high midpelvis was delivered after a forty-four hour labor. A poor application of forceps (Barton and Haig-Ferguson axis traction) was obtained and delivery was very difficult. The baby had an intracranial hemorrhage and died on the third day of life. An acute upper respiratory infection and also an acute upper abdominal distention (necessitating Levine tube drainage) developed during labor.

It should be remembered that not all mid forceps deliveries are due to the bony pelvis. Caldwell and Moloy[6] state that one mid forceps delivery in three will occur when the pelvis itself is adequate in size.

High Forceps

There were no high forceps deliveries in the series. High forceps should rarely be employed. Cesarean section or version and extraction have almost replaced its use. A floating head definitely contraindicates the use of forceps.

Forceps in Breech Delivery

Piper's after-coming head forceps were used in four of the five breech deliveries of the series. Unless Mauriceau's maneuver is easily successful, it is a good rule to apply Piper's forceps. In doing so it is important to be sure that the head has rotated from the transverse position and that the cervix has not been caught by the blade. Always guide the blade with the fingers.

I believe that the use of after-coming head forceps in breech delivery definitely lowers the mortality.

Barton Forceps

As has been repeatedly stated, this forceps has been used whenever rotation from the transverse position was necessary. It is not a new instrument. The anterior blade has a flexible "wrist" which is curved to fit behind the symphysis as well as over the upper side of the face, and it is applied by inserting it posteriorly in the vagina and rotating it upward and over the head, slipping it over the occiput or over the face. The posterior blade has a wide fixed curve which is pelvic and cephalic in its adaptation to the sacral curve as well as to that of the fetal head. In introducing the posterior blade it is best to direct it so that it will not impinge on the promontory of the sacrum. An axis traction bar may be attached for use when-

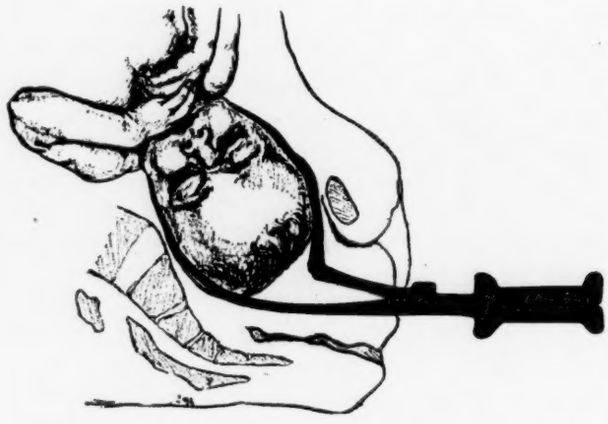


Fig. 1. Barton's Forceps. (Courtesy W. B. Saunders Co., publishers, "Principles and Practice of Obstetrics", ed. 6, by Dr. Joseph B. DeLee.)

ever rotation at a lower level is indicated. At times this becomes extremely valuable. If proper care is taken, damage to the urethra or peri-urethral tissues will usually not occur. When rotation is complete, the Barton forceps has accomplished its one and only purpose and is usually removed. The instrument was devised by Barton, of Plattsburg, N. Y., who was encouraged and further advised in its development by Caldwell and Studdiford at Sloane Hospital for Women in New York City.

Some operators prefer Kielland forceps to correct a transverse arrest. Still others prefer version and breech extraction, or a pelvic application of forceps to the oblique or transverse position. It would seem that this latter technique should now be replaced by use of forceps such as Barton's or Kielland's, since the cephalic application to the fetal head they provide is a much safer application for the baby.

Haig-Ferguson Axis Traction Forceps

The forceps used for axis traction has been the Haig-Ferguson. Actually it is a Simpson type forceps with an axis traction bar. This forceps likewise is used almost exclusively at Sloane Hospital and also at New York University (Bellevue) whenever axis traction is necessary. The head should always occupy the anteroposterior diameter of the pelvis before this forceps is applied. It is light and can be handled with ease. It can be used as a low, mid or axis traction instrument. The principle of the axis traction forceps is that of applying forceps to the head along a line parallel to the axis of the pelvis; this principle should never be lost

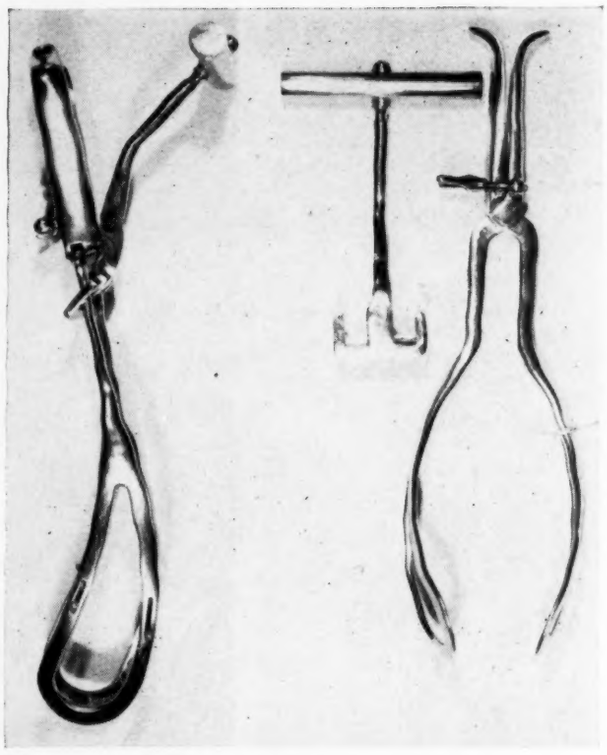


Fig. 2. Haig-Ferguson Forceps.

sight of during forceps delivery. Even in a low forceps delivery, the handle of the forceps should be elevated only after the head is partially through the subpubic arch.

Additional Factors To Be Considered in Forceps Delivery

There are many other factors of practical importance involved in forceps delivery. Any standard textbook on obstetrics will discuss these factors in detail. Here I shall stress only six:

(1) The cervix should be fully dilated before the use of forceps is attempted. A differentiation should be made between full dilatation and non-retraction of the lips over the fetal head; correcting the latter is not manual dilatation. However, occasionally even manual dilatation becomes necessary. Many of the bad results in obstetrics are due to attempts to terminate labor before full dilatation. "In Bill's opinion, the cervix has been the cause of more stillbirths than has the bony pelvis."[7]

(2) Catheterize the patient, if possible, before attempting delivery.

(3) Be sure of the correct position before applying forceps. Failure to do so may result disastrously for the baby, or produce severe injury to the maternal soft parts. If not positive about the fontanels, palpate the ear. Don't forget the importance of x-ray diagnosis of position.

(4) The forceps that slips is not well applied. When undue force is required, it usually indicates a mistake in judgment, or in diagnosis of position; the wise obstetrician will remove the blades and make a further examination.

(5) A good anesthetic is important. As the baby is actually being born, discontinue the nitrous oxide, or ether, and give only oxygen. Continue this as long as the cord pulsates.

(6) Fetal distress should be relieved by relaxation and oxygen rather than by traumatic delivery. Check the fetal heart after each traction. Always take plenty of time for delivery!

Indications for Forceps

It is sufficient to say that forceps are indicated whenever the condition of the mother, or the baby, or both, warrants intervention. Frequently the decision is a test of obstetrical judgment. Naturally a woman exhausted from a long labor, or a baby in distress is a definite indication for help. However, the modern obstetrician, if he is to be more than a midwife, endeavors, in so far as it is possible, to anticipate these dangers and to prevent them. Too often when signs of danger to the mother or baby are present, the real damage has been done.

How long should one wait, after the head has reached the perineum and progress has ceased, before applying forceps? Most obstetricians accept the rule that failure of the head to advance after being on the perineum for thirty minutes to one hour—or two hours (occasionally longer) if at a higher level in the pelvis—constitutes an indication for forceps delivery. Obviously, however, there can be no fixed time limit.

What about the free use of analgesics and anesthetics now so generally employed, and admittedly responsible in many instances for delay late in the second stage sufficient to require delivery by low forceps? Dr. Paul Titus of Pittsburgh says: "I am convinced . . . . that a labor and delivery made painless by such measures is far preferable, and contributes much more to the mother's smooth recovery, her resistance to infection, avoidance of hemorrhage, and her ability

7. DeLee, Joseph B.: The 1938 Year Book of Obstetrics, p. 295.

subsequently to nurse her baby, than the older procedure of a spontaneous but consciously painful labor and delivery."[8] Dr. Titus has expressed my sentiments exactly!

Finally, in the use of forceps, as in all other phases of obstetrics, one should follow the golden rule of obstetrics—namely, deliver the other fellow's wife as one would want his own wife delivered.

Summary

A series of 100 consecutive unselected viable births, from private practice, has been presented.

Forceps were used in 73 cases out of 96 vaginal deliveries. This constitutes a forceps percentage of 76 per cent. When the indication for forceps delivery exists, the obstetrician should select the proper forceps, and should have a thorough understanding of the technique involved in its use.

8. Titus, Paul: The Management of Obstetric Difficulties, p. 567. St. Louis, C. V. Mosby Co., 1937.

Abstract of Discussion

Dr. Lance Monroe (Concord): This paper by Dr. Jones lends itself to a variety of phases for discussion. In Dr. Jones's series one of the two fetal deaths occurred in a premature infant delivered spontaneously; and in the statistics cited from the Yale Medical School, the lower mortality rate in the group delivered by low forceps, as compared with the group delivered spontaneously, is largely due to the difference in the premature group. In doing 38 autopsies on premature and stillborn infants from the Obstetrical Service of Bellevue Hospital, in which the vast majority of cases showed arachnoid hemorrhages or subventricular hematomas, I was impressed by the fact that in 32 of these 38 deaths, the lesions occurred following spontaneous vertex delivery. The pathology of these cases, and the mechanism by which the hemorrhage occurs, need not be gone into here, but have a practical application in the management of the second stage of labor. During this period it is possible to shorten the process and to reduce the forces to which the premature infant is exposed, particularly in the primiparous patient. As shown by Studdiford, Salter, and others, delivering the fetus by low forceps and episiotomy results in a marked reduction of intracranial injuries in the premature infant. Prematurity is often another indication for the use of forceps.

I was glad to hear that Dr. Jones uses the Barton forceps. In Bellevue Hospital from July 1, 1934, to July 1, 1937, the Barton forceps was used almost exclusively on all transverse positions. We believed it to be the forceps of choice whenever rotation from the transverse position was necessary. Remember the Barton forceps must be applied only in the transverse position. The head is brought through the pelvis in this position, and the rotation should not be done until the head is on the perineum. Stereoscopic x-rays by Caldwell and Moloy have certainly shown that in the majority of cases the head enters the pelvis in the transverse position. In the gynecoid pelvis, with the head in the transverse, the most available room is being utilized. In the android and platypelloid groups, the Barton forceps is the ideal choice. Here the head has to descend in the transverse position to a low level before rotation takes place. In these types of pelves, when the anteroposterior diameters are shortened, or where there is a decreased (what Caldwell and Moloy call) posterior sacro-iliac portion of the inlet, it is necessary to utilize fully the posterior pelvic capacity, and this is best done by the correct traction with Barton forceps, where the head is first carried backward and downward, and then hugs the sacrum on its way through the pelvis.

Posterior positions occur chiefly in two architectural types of pelves. In the android and platypelloid groups, when a posterior position occurs, owing to prominent ischial spines, converging side walls, or a backward sacrum, manual rotation to the transverse position, and then descent with Barton forceps more closely resembles what takes place in the normal pelvis. In the other group—namely, anthropoid pelves—, where the width is decreased and the anteroposterior diameter increased, when posterior positions occur they can be delivered by manual rotation to the transverse position and application of Barton's forceps, because luckily these pelves are usually large; however, it is in this type that the Kielland forceps is valuable. It is usually preferable to bring the head down in the posterior position with Kielland forceps, and rotate on the pelvic floor; however pushing the head up, and rotating to the direct anterior position above the inlet of the pelvis, and descending in the anteroposterior diameter, will often give excellent results. This type of case in anthropoid pelves is the only one in which rotation above the inlet as an initial procedure should be done.

I recall three cases of high transverse arrest where Barton's forceps were applied and the head could not be brought into the pelvis. In two of these Kielland forceps were then applied, and after rotation to the direct occiput anterior position, delivery was successfully accomplished with only moderate difficulty. These pelves were studied by x-ray postpartum and found to be anthropoid in type, a fact which had not been recognized clinically before delivery. In the third case, delivery was completed by Kielland forceps after failure of Barton's, mainly because more traction was made. The infant was stillborn, and x-ray subsequently showed an android-flat pelvis. We all see failure of forceps on high heads, following which version and breech extraction are done successfully. In stressing the bony pelvis, one must not lose sight of all the other factors which determine the final outcome.

I have not had sufficient experience with the Scanzoni maneuver or Bill's technique to judge their relative value in posterior positions. I believe that in the direct occiput posterior position low in the pelvis delivery is best accomplished as such with the ordinary forceps and wide episiotomy.

Other points in the use of Barton forceps, besides those mentioned, are: (1) The anterior blade is more easily rotated over the face than over the occiput; (2) in high transverse arrests, because of an asynclitic head, care must be taken with the hinged blade to secure a proper application; (3) when applying the posterior blade the small posterior cuff of cervix which is always there must be flipped out of the way with the fingers; (4) the direction of traction is different from that used with other forceps, and must be practiced and mastered; (5) the axis traction bar can be dispensed with; (6) delivery can be completed with the forceps after rotation.

A word about the Haig-Ferguson forceps. It is essentially a short, light, Simpson forceps with a

French lock and an excellent traction bar. It is easily maneuvered. It has the advantage of parallel shanks, and a wide cephalic curve which insures against pressure on vulnerable parts of the head. As mentioned by Dr. Jones, it is the instrument used in Sloane and Bellevue Hospitals, on most anterior positions when axis traction is necessary.

Dr. G. W. Johnston (Wilmington): I want to thank Dr. Jones for his excellent paper. He is certainly to be congratulated upon the results which he has obtained.

It is taking unfair advantage of Dr. Jones to discuss a specialist's paper from the standpoint of a general practitioner. If you are equipped as Dr. Jones is in his hospital and also in his training, I think his use of forceps is an excellent procedure to follow; however, if the general practitioner uses forceps as frequently as he has, he will get some disastrous results both for the baby and for the mother.

Back in 1922 or 1923, when DeLee and Potter were putting all the emphasis on forceps and versions, DeLee made the statement that both he and Potter had killed a tremendous number of babies.

We have to have these Barton forceps and Kielland forceps on hand, but I would certainly not use them the first time on a difficult case. You had better use the forceps you are accustomed to, and try these new forceps out on some easy cases.

Unless you are in a hospital—if you are simply depending upon a midwife and your own brain and your own hands—, it is better to reserve forceps for an emergency. If you do not give the patient quite as much anesthetic and let her help you out, you will probably get better results.

Chairman Tayloe: Is there any further discussion of Dr. Jones's paper? If not, we will ask Dr. Jones to close the discussion.

Dr. Jones: I agree with Dr. Johnston's discussion. Not only do I sympathize with the general man out in the rural sections, but I have the greatest admiration for him. He works under great difficulties.

I think it is true, however, that there are a large number of men who are doing work in hospitals in the larger towns and even in our cities who perhaps could avail themselves of the opportunity to use, on occasions, these various types of forceps discussed.

Squibb Offers Lygranum For Diagnosis of Lymphogranuloma Venereum

Believed to be third in prevalence among the venereal diseases, following syphilis and gonorrhea, the importance of lymphogranuloma venereum is becoming more generally recognized. Differential diagnosis is often difficult. Clinicians will, therefore, welcome a new Squibb antigen, Lygranum, which permits differential diagnosis by means of the Frei test. It is much purer and much more potent than any antigen hitherto available for this purpose.

Lygranum is prepared by growing the organisms causing lymphogranuloma venereum in the egg yolk sac of the developing chick embryo by the method developed by Rake, McKee and Shaffer of the Squibb Institute for Medical Research. By differential centrifugation the organisms are obtained as practically pure virus. This virus is then suspended in 0.1 per cent formalin. Lygranum is distributed in a dilution which has been found by actual clinical trial to be suitable for the skin test. All lots are tested on known cases of lymphogranuloma venereum before being released for distribution.

MENTAL HYGIENE IN NORTH CAROLINA

HUBERT B. HAYWOOD, M.D., F.A.C.P.

RALEIGH

Mental hygiene and mental health are synonymous terms, and are part of the same program as physical health. There is no dividing line. For the first time in history man is making an intelligent effort to solve the problem of mental disorders. This is a problem which involves the most fundamental issues of human life and happiness.

We have an increasing number of mentally ill in North Carolina. Until now our effort has been to give them institutional care, and but little concentrated or directed effort has been made to eradicate mental sickness at its very beginning. In North Carolina there are practically no mental hygiene clinics, child guidance clinics, or psychiatric case workers. Our State hospitals for the insane are undermanned with physicians, trained workers, nurses and attendants. Our central hospital has approximately six physicians for 2500 patients. A hospital for the insane approved by the American Psychiatric Association has one physician for every 150 patients. In 1933 only five states in the Union had a greater ratio of patients to personnel than North Carolina. Our state's average was 10.8 to 1, while in the United States it was 6.6 to 1. In 1934 the average in the United States was 252 patients per physician, while in North Carolina it was 528 per physician. North Carolina stands about forty-fifth in the rank of states in per capita expenditure for patients. It allows about $250.00 annually per patient. There should not be over 40 annual admissions per physician to a state hospital. In North Carolina it averages 138 a year for each physician. North Carolina is spending more than a million dollars annually on the maintenance of charitable institutions devoted to mental health. As you may easily discern, the time and efforts of the staff of our psychiatric hospitals are necessarily devoted to the care and treatment of mental cases. Preventive work is impossible, since funds and physicians are not available. For every dollar spent for treatment and care of mental cases an equal amount should be spent for prevention.

In 1939 the Division of Mental Hygiene

Read before the meeting of the North Carolina Mental Hygiene Society in Greensboro, November 1, 1940.

of the State Board of Charities and Public Welfare was reorganized along psychiatric lines. It now has a director and an assistant director, both of whom are psychiatrists. The assistant director came to the Division in 1939 as director of the Children's Unit, which acts as a child guidance service to the thirty or more counties of the state which participate in the Child Welfare Services. Some of the functions of the division are the stimulation of interest in the development of Mental Hygiene Clinics, the improvement of the mentally ill and mentally deficient, the inspection of institutions, and the extension of psychiatric services within certain limits on an individual basis. This in brief is the sum total of the organized effort to prevent mental diseases by the state of North Carolina. Approximately four cities in North Carolina now have mental hygiene and child guidance clinics supported by private benefactions. Only two physicians are provided by the state for a population of 3,500,000 people.

The great prevalence of mental disease is a public health problem and recognized preventive measures should be instituted. The latest census shows that the United States has a population of 131,409,881. Of this number 45,000,000 live below the safety line because they are not getting the kinds and amounts of food necessary for health. In 1934 there were 201 cases diagnosed as pellagra in our state mental hospitals. They cost the state $33,805 yearly for maintenance. Pellagra rarely develops in state institutions today. Psychotic symptoms develop before admission. The prevalence of dementia praecox alone, and its cost to society not only in dollars and cents, but in loss of human values, make it one of the very biggest public health problems. The degenerated dementia praecox cases form the bulk of the chronic mental cases in our institutions. Sixty per cent of the readmissions to our state hospitals are due to dementia praecox and manic depressive psychosis. At the Maryland State Hospital 47.6 per cent of first admissions are classified as dementia praecox, and of readmissions this disease accounts for 56 per cent. In our state 145 out of 1000 new admissions at the Goldsboro Hospital were dementia praecox cases; at Dix Hill there were 182 cases out of 847 admissions; and at Morganton, which takes only mentally diseased patients, among 552 admissions, 166 were dementia praecox patients. This is almost one out of every three patients. Early diagnosis and early admission to a mental hospital for treatment means a shorter duration of stay. Over half of the patients admitted to mental hospitals have been ill for a year or more before admission. Sixty and seven tenths per cent of first admissions are discharged. Of those discharged 79.5 per cent were diagnosed on admission as having psychosis, 21.5 per cent as not having psychosis. Of those with psychosis 42.6 per cent were discharged as recovered, 51.1 per cent as improved, 6.3 per cent as unimproved. Patients with psychoneurosis and psychopathic personality form 2 per cent of the total of the state's hospital population. Ample out-patient departments should help remedy this. The proportion of inebriates in our hospital population is higher than in other states. The number of mentally deficient patients in our state hospitals is relatively small.

Sterilization is most directly indicated in the presence of mental defects. It is the mentally defective and to a less extent the mentally diseased who should be considered for sterilization. A few familial diseases of the central nervous system should also be considered as cause for sterilization. Many cases of mental retardation are due to injury or disease and are not attributable to heredity. Syphilis furnishes a certain percentage of such cases, rather small for the white and large for the colored inmates in North Carolina asylums. This problem is now being vigorously attacked by the State Board of Health. Three hundred and fifty individuals have been sterilized in the state in the last two years. The number is too small. If we accept the intelligence quotient of 70 as an index of mental deficiency, it is estimated that we will find 58,549 mentally handicapped children in the public schools of North Carolina. Maladjustment in school and in life is inevitable in this group, which comprises about 5 per cent of the children in the state. There is no definite or special provision for the defective in the state school program. This fact contributes to his delinquency; many of these juvenile delinquents come into the courts. In the public schools of North Carolina a total of 240,288 children failed to pass. This was 26.9 per cent of the total enrollment. The total expendi-

ture per child was $30.00. Over $7,000,000 in 1934-35 was expended for grade repeaters. There are no public school child guidance clinics.

Farm tenancy in North Carolina has decided mental hygiene aspects, due to low family nutritional levels, overcrowding in inadequate and unsanitary houses, poor school attendance with frequent changes of school and consequent grade loss. This leads to truancy and delinquency. Ten per cent of this class are illiterate and furnish citizenship of a low moral and intellectual level whose emotional outlets become narrow and restricted, leading ultimately to mental disease. Nutritional diseases with psychopathic degeneration are also prevalent among this class.

I have thus tried to discuss briefly some of the fundamental causes of mental disease in North Carolina. The efforts of the State Educational Department, the Prison Parole Commission, the nutritional specialists of the Agriculture Department, the county and State Health Department, the State Welfare Department, and the State Mental Hospitals should be coordinated under one acting head for the improvement of mental health. In the field of public health, where prevention is the keynote, the great progress made in combatting tuberculosis has not come from the discovery of the specific cause or from specific treatments, but from preventive treatment and early care. Here lies the key to a practical means of stemming the rising tide of mental hospital commitments in North Carolina. The successful fight to conquer pulmonary tuberculosis furnishes the outline of a campaign to combat mental disease. Where such a plan has been tried brilliant results have been achieved. In 1934 three mental hospitals in the state of New Jersey conducted 560 mental hygiene clinics. Diagnoses and treatments numbering 3,962 were extended to 2,374 patients. In about 70 per cent of the cases it was possible to avoid institutional treatment. Early diagnosis of maladjustment in a patient's environment and the administration of treatment necessary to help him adjust himself took care of most of these cases.

North Carolina is thus provided with a plan of procedure for the diagnosis and care of mentally diseased patients. There is a need for community service supporting this work. Every sizable community should provide special clinic service, with at least part time employment of competent psychiatrists, psychologists and workers trained in mental hygiene. Then when a parent or teacher refers a child who is not adjusted to his surroundings, careful instruction can be given as to the best method of handling the particular problems presented. Frequently, particularly with behavior disorders, the problem is found in the family situation and not with the child himself. Many a child develops delinquent or criminal tendencies because he is not understood by those responsible for him, and does not have an environment suitable for his needs. One psychiatric social worker can supervise a minimum case load of 75 mental patients in their own communities. A trained psychiatric social worker will cost the state or county from $2,000 to $3,000 a year, whereas the maintenance of 75 patients in a state or county mental hospital will amount to $40,000 or $50,000 a year.

Summary

1. The mental hospitals in the state could be expanded into modern institutions of the latest type with little additional cost.

2. There should be an increase in the psychiatric social service or follow-up field work so as to enable mental hospitals to parole a greater number of patients who can be safely adjusted in the community.

3. There should be a continued extension of mental clinics based on the mental hospitals and the State Welfare Department to serve communities in the diagnosis of mental and nervous disorders, and to reach potential sufferers from these disorders before the definite breakdown occurs.

4. There should be formulated a working plan for the guidance of school teachers, nurses and medical officers which will enable them to note evidences of nervous and mental instabilities and to direct suitable cases to the nearest psychiatric clinic where advice and preventive treatment may be secured.

5. Local communities should be encouraged to develop psychiatric departments for mental and nervous patients as part of the local general hospitals. Such a psychiatric department connected with a general hospital would be valuable as a "first aid station". It would be suitable for nervous patients who feel the need of special care,

but who are unwilling to go to a public hospital for the insane. Medical specialists in mental diseases, psychiatrists in the local communities or from state or county hospitals could act as consultants to these psychopathic departments of general hospitals.

North Carolina's efforts to ensure mental health are inadequate. A well directed program is a necessity. I have drawn freely on the work of earnest and competent psychiatric and lay investigators in North Carolina and other states. The figures presented by me are of necessity, in many cases, only approximate. However, we may extract truths from these facts which will serve as a firm foundation for the structure of mental health in North Carolina.

THE THERAPY OF DEFICIENCY STATES

FREDERIC M. HANES, M. D.
Professor of Medicine
Duke University School of Medicine

DURHAM

It was believed until a few years ago that the animal organism would grow and thrive on sufficient quantities of proteins, carbohydrates and fats. Gradually, however, it began to dawn on students of nutrition that other substances, now known as accessory food factors, were absolutely essential to the health and well being of the body. It has been known for a long time that a number of *inorganic* substances, such as iron, calcium and phosphorus were essential dietary constituents, but the concept of certain mysterious *organic* substances, lack of which would cause serious pathologic conditions, was clearly formulated by Hopkins of England in 1906, in a statement so accurate and prophetic that it will be quoted here.

> "No animal can live upon a mixture of pure protein, fat and carbohydrate, and even when the necessary inorganic material is carefully supplied, the animal still cannot flourish. The animal body is adjusted to live either upon plant tissues or other animals, and these contain countless substances other than the proteins, carbohydrates, and fats . . . . The field is almost unexplored, only it is certain that there are many minor factors in all diets, of which the body takes account. In diseases, such as rickets, and particularly in scurvy, we have had for long years knowledge of a dietetic factor, but though we know how to benefit these conditions empirically, the real errors in the diet are to this day quite obscure . . . Scurvy and rickets are conditions so severe that they force themselves upon our attention, but many other nutritive errors affect the health of individuals to a degree most important to themselves, and some of them depend upon unsuspected dietetic factors."

Funk coined the name "vitamin" in 1912, and during the past two decades, and more especially during the past ten years, our knowledge of the number, importance in nutrition and, finally, the chemical structure of vitamins has been enriched by some of the most brilliant and difficult researches in the history of medicine. This knowledge of vitamins is available to all in the current literature, where excellent discussions of the sources, indications for their use, dosages, etc., have appeared recently[1]. It is not my purpose in this brief paper to attempt a restatement of facts which are easily accessible, but I believe you share my own interest in the newest phase of the subject—namely, something of the chemical nature of some of the vitamins and their mode of action in the body's metabolism.

A few general statements may be made in regard to vitamins:

1. A vitamin is a chemical compound which, like the enzymes, acts as a catalyst in metabolic processes. Some of the vitamin is lost in the course of its activity, and hence it must be replaced daily.

2. Enzymes and hormones are produced by the cells of the body—they are endogenous in origin; whereas vitamins are not produced by the cells of the body, but they, or their precursors, must be supplied from without—they are exogenous in origin. The recognition of this fact is essential to an understanding of deficiency states, and guides our treatment of these conditions.

3. Vitamins, when acting as enzymes, are always attached to a specific protein, and the needed vitamins vary in different species.

Read before the Seventh District Medical Society, November 20, 1940.

1. The Vitamins, American Medical Association, Chicago, 1939.

For example, scurvy cannot be produced in the dog or rat by a deficiency of vitamin C in the diet.

4. In the presence of a deficiency, vitamins are very potent and act with astonishing rapidity, but once the deficiency is supplied, an excess of the vitamin is therapeutically useless, though not actually harmful, except in very large amounts.

5. It is probably true that all deficiency states are associated with multiple vitamin deficiencies, and, as a corollary to this, we may conclude that the natural sources of the vitamins are to be preferred, where they can be employed, to the synthetic compounds, except for reinforcement and emergency use.

6. Deficiency states are by no means always the result of poverty; dietary idiosyncrasies, food faddism, ill-advised reducing diets, pregnancy, etc., may produce deficiencies in the presence of plenty.

Of the ten vitamins whose chemical structure is established (A, B_1, C, D, E, B_2, B_6, nicotinic acid, K, pantothenic acid) the physiological action of four has been correlated with a known structural arrangement of the vitamin when acting as an enzyme. These are vitamin A, and three of the components of the B complex—namely, riboflavin, nicotinic acid and thiamin. In the brief time at my disposal certain physiologic actions of these four will be considered.

The normal functioning of the cells of the body, and ultimately their lives, depend upon access to and proper utilization of food. The basic food-stuff of the body is glucose, and it is well known that both fats and proteins can be transformed into glucose in the body's metabolism. It is of the greatest interest, then, to find that the B complex, whose function until recently was shrouded in mystery, seems intimately concerned with the all important metabolism of glucose. It is probable that the B complex has other functions[2], but time does not permit of their consideration.

In discussing sources of energy in cells it may help if we approach the subject in a very elementary manner. Chart I A illustrates the synthesis of starch or sugar by the plant cell. The sugar (or starch) molecule now contains within it stored potential chemical energy which is released in the animal cell in the over-all oxidation reaction

CHART I

Synthesis of Sugar by Plants

A. $6CO_2 + 6H_2O \xrightarrow[+\ \text{LIGHT ENERGY}]{\text{CHLOROPHYLL}} C_6H_{12}O_6 + 6O_2$

Oxidation of Sugar in Animal Body

B. $C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O + 720$

180 GRAMS GLUCOSE; 192 GRAMS OXYGEN; 264 GRAMS CARBON DIOXIDE; WATER; CALORIES HEAT

C. $C_6H_{12}O_6 \xrightarrow[\text{FERMENT}]{\text{GLYCOLYTIC}} 2\,CH_3\,CH(OH)\,COOH + \text{ENERGY}$

GLUCOSE; LACTIC ACID

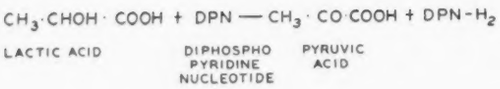
illustrated in Chart I B. One gram of sugar burned yields 4 calories of energy. This energy is used to perform the work of the cells, tissues, and organs of the body as a whole, and to maintain the body temperature. There is constant dissipation of all of this energy, mostly as heat, and to maintain the supply of available energy the oxidation process must go on continuously. But the over-all oxidation reaction which occurs in a bomb calorimeter, or in an efficient burner, cannot take place directly in living cells. In the cells of the body this reaction is accomplished in many complicated steps involving the participation of many organic catalysts, or oxidative enzymes. Some of these enzymes are known to be complex systems, containing definite organic groups attached to a protein: the vitamins of the B complex—B_1 (thiamin), B_2 (riboflavin), and nicotinic acid—are known to function as components of some of these oxidative systems.

Starting with glucose as the ubiquitous source of energy, it is known that most cells have the ability of splitting, with the aid of a ferment, one molecule of glucose into two of lactic acid, anaerobically, with the liberation of a small amount of energy which is used in muscle cells (Chart I C).

Charts II and III illustrate without further description the manner in which nicotinic acid, riboflavin and thiamin are believed to enter into the oxidation of lactic acid and pyruvic acid. The chemical configuration of the vitamins nicotinic acid and riboflavin, when acting as enzymes, is shown in Charts IV and V. Thiamin pyrophosphate is necessary for the decarboxylation of pyruvic acid, and in thiamin deficiency states it has been shown that pyruvic acid accumulates in the blood. In the oxidation of lactic acid, then, there is needed a nicotinic acid derivative

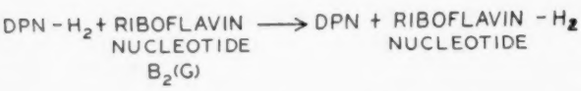
2. Bernheim, F.: Integration of Vitamins and Drugs with Cell Catalysts, J. Lab. and Clin. Med. 26:20 (October) 1940.

CHART II



THE ENZYME, DPN, ACTING AS A HYDROGEN ACCEPTOR, OXIDIZES LACTIC ACID TO PYRUVIC ACID.

CHART III.



THE NICOTINIC ACID ENZYME DPN IS RESTORED TO ORIGINAL STATE AS HYDROGEN ACCEPTOR BY THE RIBOFLAVIN NUCLEOTIDE (B_2.G), WHICH IS REDUCED.

(diphosphopyridine nucleotide), which in its turn requires a riboflavin derivative (riboflavin dinucleotide); the pyruvic acid, formed from lactic acid, requires thiamin for its oxidation.

In the enzyme systems illustrated in Charts IV and V the body can furnish *endogenously* all the components except *the vitamins nicotinic acid, riboflavin* and *thiamin;* these must be ingested with the food, and if they are lacking we have a "deficiency state".

CHART IV

DIPHOSPHOPYRIDINENUCLEOTIDE (DPN)

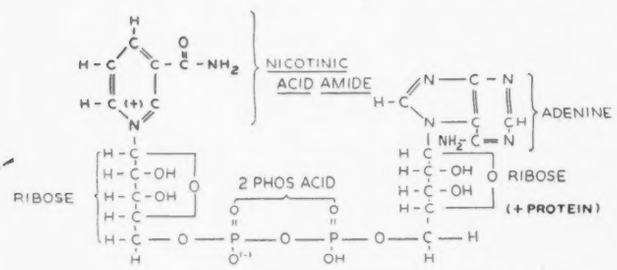


CHART V

RIBOFLAVINDINUCLEOTIDE

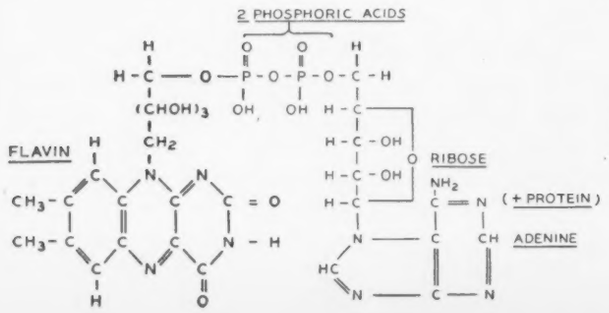
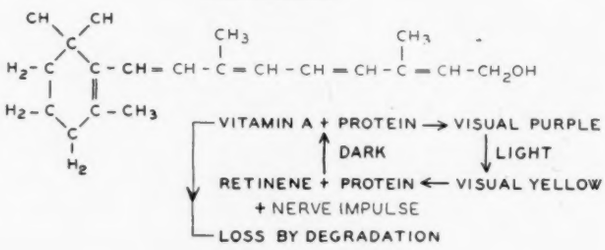


CHART VI

VITAMIN A



In the studies on black tongue in dogs, at Duke University, Kohn, Klein, and Dann[3] found that such dogs had a normal amount of the coenzymes (nicotinic acid amide and riboflavin) in their bloods. However, it was found that the coenzyme content of the liver was reduced 70 per cent, and of the striated muscle 35 per cent, whereas the other tissues and organs had normal values. This would indicate that the liver acts as a regulator of the essential coenzymes needed for glucose metabolism. Here, then, we have a regulatory mechanism for vitamins comparable to the parathyroid regulation of calcium, or the maintenance of normal sugar values in the blood.

The exact part that vitamin A plays in rod vision and its relation to rhodopsin (visual purple) was first elucidated by Wald (Chart VI). He was able to show that the following cyclic mechanism occurs. Illumination rapidly bleaches rhodopsin even in solution, extracted and separated from the retina, and the yellow pigment retinene is formed. Some of the retinene can be directly reconverted in the dark into rhodopsin, but some is converted into vitamin A. These two reactions occur to a slight extent in solution, but take place readily in the isolated retina. The vitamin A formed is then slowly reconverted into rhodopsin. This reaction, however, occurs only in the intact eye, where rhodopsin, retinene, and vitamin A are all loosely combined with protein.

3. Kohn, Henry L.; Klein, J. P.; and Dann, W. J.: The V-Factor Content and Oxygen Consumption of Tissues of the Normal and Blacktongue Dog, Biochem. J. 33:1432, 1939.

It is obvious from this brief and admittedly inadequate discussion that the role of some of the vitamins is rapidly being elucidated, thus placing the therapy of deficiency states on a much more exact basis.

PUBLIC HEALTH WORK FOR THE YOUNG DOCTOR

GEORGE M. COOPER, M. D.
Assistant State Health Officer
RALEIGH

In the language of the old time essayists in every medical society meeting in the land, this sketch might be considered a "plea" for more competent young physicians to enter the field of public health as a life work. The State Board of Health today is having more difficulty than it should in getting competent young physicians in active life to take the necessary training in order to qualify as county and city health officers and as members of the staff and what might be called the sub-staff at the central office in Raleigh.

It is understood that now as in the past —and we fervently hope in the future—the local authorities will continue to hold the power and responsibility for the election of local city and county health officers. However, the local authorities must be assured from a competent impartial agent such as the State Board of Health that the man they employ meets certain definite requirements and is competent in every way to discharge the increasing duties of health officer.

The State Board of Health has been criticized occasionally in the past for recommending physicians who have been born and reared and educated outside of North Carolina, and who, before they can assume the duties of health officers, must be granted license by the North Carolina Board of Medical Examiners. The State Board of Health would naturally prefer to recommend young men for such places who have been educated in the history and traditions of this state, and who would naturally be better qualified to understand the needs of the people they serve. The State Board of Health wishes to see such places filled largely by the highest type of young North Carolinians who are thoroughly trained as physicians and qualified as health officers, and who have the best years of life before them. Unless an increasing number of the state's young medical men become interested in public health as one of the important and desirable specialties of medicine, it will be necessary for the State Board of Health to continue to accept a considerable number of applications from qualified young physicians outside the borders of the state.

Public Health is one of the youngest specialties in medicine, but at the present time it is rapidly becoming one of the most important and one of the most desirable to a young man who wishes to serve the people of the state in a capacity which will build a name for himself and his family in the city or county in which he may cast his lot. The public health profession is rapidly coming to be highly respected by the people as a whole. A conscientious young physician of clean mind and clean life can exert a wonderful influence for good in any county or city in the state if he will devote his life to such service.

With the advent of the merit system, in which very soon no physician over 35 years of age will be admitted to public health service, and in view of the expected action by the present Legislature to establish a retirement system for all State employees covered by the merit system (which will include county and city health officers who participate financially in Government funds, as nearly all of them do at this time), the positions will be more secure and free from political interference.

The need for such officials is here now, and will become greater during the next two or three years as the remaining counties become organized and as additional personnel are required in most of the larger cities and counties in the state.

The Effect of Socialization on Public Health.—The medical care received by the American people is the envy of the rest of the world. It has developed under the system of private practice. We have only to look at Europe where, over a period of the last twenty-five years, they have partially or completely socialized medical practice, to see their constantly mounting incidence and death rates in tuberculosis and other communicable diseases under their system as compared with the constantly decreasing incidence and mortality of these same diseases in our country, in order to see what a debacle that socialization can create in public health. —A. C. Callister: The Medical Profession's Ideals in Medical Service, Rocky Mountain M. J. 38:106 (February) 1941.

DEDICATION OF THE DEPARTMENT OF NEUROPSYCHIATRY

DUKE UNIVERSITY SCHOOL OF MEDICINE

November 29, 1940

DEDICATORY TALK

WILBURT C. DAVISON, M. D.

This new Department of Neuropsychiatry, headed by Dr. Richard S. Lyman, formerly of the staff of the Phipps Psychiatric Clinic of the Johns Hopkins Hospital, was started September 1, 1940. It was made possible by a generous grant from the Rockefeller Foundation, which effectively supplemented the gift of the Highland Hospital at Asheville, made last year by Dr. Robert S. Carroll. We are deeply grateful for their unselfish aid.

A Department of Neuropsychiatry has been ardently desired since the School was started, and the one we are dedicating today has been worth waiting for. The ward on the third floor is named for Dr. Adolf Meyer of the Phipps Psychiatric Clinic, and the Kirby Clinic in the out-patient department perpetuates the memory of Dr. George H. Kirby, one of North Carolina's pioneer psychiatrists.

During the past five years, interest in neuropsychiatry has grown in North Carolina. Following the survey of the mental health of the state by Dr. Lloyd J. Thompson in 1935, which was sponsored by the Rockefeller Foundation, the State Board of Charities and Public Welfare appointed Dr. James Watson as Director of Mental Hygiene and Dr. Richard F. Richie in charge of The Children's Unit. Our new Department of Neuropsychiatry will greatly aid this state program as well as fill the needs of the School and Hospital. There can be no doubt that the development of neuropsychiatry throughout the South will be greatly stimulated by the leadership which this new department can and will give to this difficult field of medicine.

DEDICATORY TALK

FREDERIC M. HANES, M. D.

With the inauguration of our new Department of Neuropsychiatry, and the completion of the Private Diagnostic building, Duke Medical School has completed its ten year plan. We now have a school well-rounded and well-balanced, containing under one roof the laboratories needed for scientific investigation and the wards for the care of patients.

The Trustees of Duke University and the Duke Endowment have dealt with us in a fine spirit of generosity and with a wise foresight which makes us humbly thankful. I say humbly, because so much, generously bestowed, places upon us a great obligation —an obligation that may well exceed our powers to perform. Let us not delude ourselves. The splendid surroundings in which we work will become only a reproach unless the quality of the work we do reflects credit upon these surroundings. *"Noblesse oblige."*

Today we live in a grim and brutal world. Nations which we had hoped were leading us to a higher culture, and a kindlier civilization, are now dominated by ruthless men who are turning back for their inspiration to those bleak centuries justly termed the Dark Ages. It is a time to shake man's faith in man, but it is also a very fitting time to dedicate to the service of sick mankind one more small evidence that medicine holds fast to sanity in a world that seems violently insane.

Seventy-six years ago a group of men met at Gettysburg to dedicate a memorial to the soldier dead. Lincoln said, very simply, that they were not gathered to dedicate a monument, but to dedicate themselves to the cause in which they believed. And so today, it would seem fitting that we not only dedicate these buildings, but that we also dedicate ourselves anew to that profession which ever seeks to serve and help mankind.

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MARCH, 1941

THE EARLY DIAGNOSIS OF CARCINOMA OF THE STOMACH

One of the gravest defects in the education of the medical student is that disease too often is studied from the standpoint of the autopsy. So-called "textbook pictures" of disease frequently might be used by authors of textbooks on pathology. Nowhere is this unfortunate attitude better illustrated than in the case of carcinoma of the stomach, where textbooks of clinical medicine lay great emphasis upon signs which clearly indicate that the disease has progressed to a stage of complete therapeutic hopelessness. A patient exhibiting emaciation, anemia, loss of strength and a palpable epigastric tumor may arouse a mild interest in the pathologist, but certainly is of no interest whatsoever to the therapeutist!

It is estimated, on what seem to be reliable data[1], that 40,000 people in this country die yearly from cancer of the stomach. In contrast to this figure the number of patients with cancer of the stomach whose lives are saved by physicians is pitifully and tragically small. *The present status of this disease is a disgrace to the medical profession.*

This is not the place to enumerate the various early evidences of cancer of the stomach, for our medical journals frequently contain articles on the subject. It must be said repeatedly and urgently, however, that any patient, and especially patients past 40 years of age, who complain of indigestion of *any character whatsoever* should cause the physician to think strongly of cancer, and his suspicion should not be allayed until all diagnostic methods have been exhausted. An aphorism worthy of memory is that in pathological states *blood means cancer until it is proven otherwise.* The demonstration of persistent occult blood in the stools may be much more important than x-ray evidence, which frequently is negative until the growth is far advanced.

It is truly remarkable how fearful physicians are of the word "cancer". All too often they acquiesce in the patient's attitude of minimizing the seriousness of a persistent and refractory indigestion. No wise physician will communicate hastily his fears to a patient, but neither will he lull himself into a false sense of security in the presence of possibilities so fearful, nor delay exploratory operation until the certainty of his diagnosis spells the certainty of death.

1. Gray, H. K.: Carcinoma of the Stomach, J.A.M.A. 116: 22 (January 4) 1941.

DR. MANNING, SECRETARY AND TREASURER

It is hard to think of a happier choice for a successor to Dr. Tom Long than Dr. Isaac H. Manning. His long service as dean of the University School of Medicine, climaxed by his year as president of the State Medical Society, has given him a wider acquaintance among North Carolina doctors, perhaps, than any other member of the Society. His sound judgment, his honesty, and his executive ability eminently fit him for the office. With the very capable help of Miss Margaret Long, who had been her father's right hand man and who knows every detail of the job, the work of the office should go on without a hitch. That it will do so is a tribute to the late Dr. Tom Long, to his daughter, and to Dr. Manning.

Dr. Manning's new position automatically makes him the business manager of the NORTH CAROLINA MEDICAL JOURNAL. To him and to Miss Margaret Long, this JOURNAL pledges its heartiest cooperation.

DR. PAUL H. RINGER

The following editorial from the January issue of *The Southern Medical Journal* will be of interest to all the members of the Medical Society of the State of North Carolina, of which Dr. Ringer was president in 1936.

PAUL HENRY RINGER

President of the Southern Medical Association

A man of many gifts is the new President, Dr. Paul H. Ringer, a linguist and a musician, as well as one of the most scholarly members of the medical profession.

He was born in New York City, November 6, 1881, the only child of Severin and Elisa Minot Ringer. His father, a Pole by birth, was Professor of Modern Languages at Lehigh University. His mother was a Belgian, and an accomplished musician. Dr. Ringer attended private schools in New York, received his A.B. from Columbia University in 1901, and his M.D. in 1904. He served internships in Bethlehem, Pennsylvania, and New York City, and came to Asheville, North Carolina, to begin practice in 1906. He was associated with the late Dr. Charles L. Minor, and specialized early in diseases of the chest. His years of practice have covered the period of prominence of Asheville in the field of tuberculosis; and he himself has achieved prominence for his work particularly in this disease.

In 1915, Dr. Ringer married Miss Eleanor Varick Morrison, of Asheville. They have two children, Paul, Jr., a graduate of Princeton and now a student at the Vanderbilt University Medical School, and Eleanor, who is at Sweet Briar College.

In the World War Dr. Ringer served as Captain in the Medical Corps of the United States, attached to the Italian Army at Base Hopital 102 in Vicenza, Italy. He has had many medical and civil honors, including the presidency of his state medical association and of leading organizations for the study and prevention of tuberculosis.

He speaks French and German fluently, has a singing voice of fine quality, and is a gifted speaker. A fluent writer, he is also an omnivorous reader with a catholic taste in literature. He has made many contributions to medical periodicals. He is broadly civic minded and in Asheville has headed the Community Chest among other charitable organizations, and the Civic Music Association, and he is active in the Presbyterian Church, in which he is an elder. His memberships include the Columbia University Club of New York, Biltmore Forest Country Club, Pen and Plate Club, and the Civitan Club.

He has been president of the Southern Tuberculosis Conference, has held office in several of the special societies, and is a diplomate of the American Board of Internal Medicine.

In 1913, he joined the Southern Medical Association and since then has attended twenty of its meetings. In 1928, he was General Chairman of the Asheville meeting of the Southern Medical Association and for six years represented North Carolina on the Council of the Association.

To a rare degree he combines the qualities of scholarship, ability as an internist and diagnostician, leadership and forceful speaking. Few men have reached the presidency of the Southern Medical Association so well equipped for the office and with such widespread approval of his associates as has Dr. Ringer.

HISTAMINIC CEPHALGIA

There exists a large group of patients who suffer from headaches or cephalgia, which may be described, for want of a more definitely etiologic term, as "functional" headaches. Needless to say, all headaches should be regarded as due to a demonstrable organic cause until the most careful study has ruled out brain tumors, sinusitis, hypertension, syphilitic meningitis and the many other definite pathological conditions capable of producing cephalgia. But the most meticulous examination will still leave unexplained a large heterogeneous group of headaches.

From this group Dr. Bayard T. Horton[1], of the Mayo Clinic, has very brilliantly separated a clear-cut, clinical syndrome which he calls "histaminic cephalgia". He defines

the syndrome as follows: "Histaminic cephalgia is characterized by a unilateral headache, which usually begins in the later decades of life, is of short duration as it generally lasts less than an hour, commences and often terminates suddenly, tends to waken the patient at night one to two hours after he has gone to sleep and is frequently eased by the patient sitting up or by standing erect. It is associated with profuse watering and congestion of the eye, rhinorrhea or stuffiness of the nostril, increased surface temperature and, often, swelling of the temporal vessels of the involved side of the head."

The pain is located in the distribution of the external carotid artery, and is the result of dilatation of its branches, due to histamine stimulation. The cure is produced by the graded, subcutaneous injection of histamine at certain intervals, or by histaminase by mouth.

Dr. Horton's contribution is a model of the type of very valuable clinical investigation which is within the powers of any well trained clinician. The article is so important and helpful that it should be studied carefully by every physician who cares for patients, no matter what his specialty may be.

1. Horton, Bayard T.: The Use of Histamine in the Treatment of Specific Types of Headaches, J.A.M.A. 116:377, (February 1) 1941.

* * * *

PROFESSOR WINGATE M. JOHNSON

In last month's issue of the NORTH CAROLINA MEDICAL JOURNAL there appeared a fine editorial entitled "Welcome to Dr. Tinsley Harrison". I am sure that all the readers of the JOURNAL will concur in this expression of respect for an emiment scientist and physician, but they will not forgive our modest editor for not telling them that Dr. Harrison is only half of the team heading the Department of Internal Medicine in the expanded Wake Forest Medical School in Winston-Salem. So, with the consent of the assistant editor, I am exercising my prerogative as a member of the editorial board to contribute an editorial to the JOURNAL.

Ever since the announcement was made that Wake Forest would move its medical school to Winston-Salem, it has been the unanimous opinion of physicians and educators that there is no man better qualified for a professorship in Medicine than Dr. Wingate M. Johnson. Although he was constantly urged to assume the entire responsibility for the medical department, he steadfastly insisted that his interest is clinical medicine, and that in order to carry out a well rounded program, there should be a proper balance between didactics and research on the one hand and medical practice on the other. In this we all agreed. On the other hand, everybody except Dr. Johnson himself recognizes that he ranks as high in scholarship as any physician who may be considered for an academic position. A native son with a long line of family tradition for writing and scholarly attainment, Dr. Johnson has, while engaged in one of the busiest practices in the state, become recognized nationally as a writer and scholar. The faculty of Wake Forest College, voting unanimously to award him the honorary degree of Doctor of Science at Commencement of 1940, were equally as willing to offer him the degree of Doctor of Literature. His book, "The True Physician", published in 1936, is a treasure of both physicians and laymen. As editor of the JOURNAL, he has conducted a readable and understandable publication with the highest standards.

When the Board of Trustees of Wake Forest College at their meeting on January 8 elected Dr. Wingate M. Johnson Professor of Clinical Medicine and Dr. Tinsley R. Harrison Professor of Medicine, they assured for the new medical school a high ranking place in education. This opinion was expressed by Dr. Frederic M. Hanes, Professor of Medicine at the Duke Medical School, in his announcement of the appointment of these two men to the Wake Forest faculty at the meeting of the Duke Medical Society on January 15.

So we all agree, "Welcome to Dr. Tinsley Harrison"; but we would also add, welcome to Professor Wingate M. Johnson in one of the few fields of medicine in which he has not served. It is one in which all of his colleagues are confident that he will excel.

COY C. CARPENTER, M.D.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

August 9, 1940

DR. J. M. RUFFIN (reading the clinical summary):

This 59 year old colored married man was first seen in the Out-Patient Department in July, 1936. At that time he complained of choking and weakness for the past three weeks.

The family and marital histories were of no importance.

Past History: His general health had always been good. He had had no operations or serious injuries, and no cardiac or respiratory symptoms. At the age of 12 he had had an attack of painless jaundice, and low grade fever lasting for one week. In 1930 he had a two-week episode of diarrhea, passing twelve to fifteen stools daily, which occasionally contained blood. During 1932 he had a twelve-week episode of gnawing mid-abdominal pain, occurring about thirty minutes after meals and relieved only by magnesium sulphate. On two or three occasions during that period he passed large tarry stools. He had a penile sore at the age of 17, which lasted about three weeks. He took one intravenous injection of a yellow liquid. He had had gonorrhea twice, once at the age of 18, and once at the age of 32. He had lost about 34 pounds during the preceding two years.

Present Illness (1936): About three weeks previously, while working in the sun, he had a sudden onset of weakness, dizziness, scotomata and amblyopia. He did not fall, but was unable to continue working, and a few minutes later noticed a tickling in the throat and had a sensation of fullness which caused him to have a non-productive cough. Accompanying the attack were a severe frontal headache and extreme weakness. Two days later, thirty minutes following exertion, he had a sudden attack of severe, precordial, knife-like pain lasting two or three minutes, and dyspnea for about ten or fifteen minutes. He continued to have a constant tickling in the throat and a sensation of a mass in the suprasternal notch.

Physical Examination: Examination at that time revealed normal temperature, pulse, and respiration; the blood pressure was 110 systolic, 80 diastolic. He was in no pain or distress, but on talking or sitting up he had paroxysmal coughing. There was generalized lymph node enlargement. The pupils were equal and round and reacted normally to light and accommodation except for some hippus. Ophthalmoscopic examination showed only moderate tortuosity of the retinal vessels. The heart was enlarged 12 cm. to the left of the midsternal line in the fifth interspace. The aortic second sound was somewhat metallic. There were no murmurs. Retromanubrial dullness was 6 cm. in the second interspace, and 8 cm. in the third interspace. The peripheral vessels showed moderate sclerosis. Abdominal examination was normal except for some tenderness over the right kidney region. Neurological examination showed no changes.

Accessory Clinical Findings: The blood Wassermann and Kahn reactions were 4 plus. The urine was negative. The hemoglobin was 13.5 Gm. Fluoroscopy of the chest showed diffuse dilatation of the aorta, especially in the ascending portion, which was thought to be due to aneurysm. This was somewhat larger a month later.

He received six injections of bismuth during the next two months and then was lost sight of.

Final Admission: He returned to the emergency room on July 14, 1940. During the interim he had apparently gotten along fairly well. On the afternoon of admission he was sitting watching a baseball game, when, immediately after laughing heartily, he was seized by a sense of tightness in his neck and throat, with some dyspnea. This gradually became worse during the next hour and was associated with distention of the veins of his arm, the right side of his neck and the face.

Physical Examination: The temperature was 37.5 C.; pulse, 124; respirations, 36. The blood pressure in the right arm was 120 systolic, 70 diastolic; in the left, 120 systolic, 65 diastolic. The patient was an acutely ill, moderately dyspneic, elderly negro, with marked engorgement of the neck veins. During the course of the examination he frequently "milked down" the veins of his neck, because he said it helped him to breathe. There was a generalized lymph node enlarge-

ment. There was marked distention of the veins on the right side of the face, forehead and scalp. The right pupil was somewhat smaller than the left; both responded to light. Hearing was good and equal. The nose was partially obstructed. There was marked venous engorgement. The teeth were carious. The tongue was coated. The pharynx showed congestion and dilatation of the superficial veins with edema of the soft tissues. The tonsils were small. The trachea was questionably shifted to the left. The chest was symmetrical. Expansion was bilaterally limited but equal. Respiratory movement was primarily abdominal. Breathing was shallow. Breath sounds, fremitus and whispered voice were diminished bilaterally, but were equal except in the region of the left scapula, where they were increased and breath sounds were bronchial. There was dullness to percussion beneath the left scapula. No rales were heard. The apical impulse was noted in the fifth interspace 12 cm. from the midsternal line. The heart rate was rapid. The sounds were of fair quality. The rhythm was regular. Retromanubrial dullness was 10.5 cm. in the second interspace. In the aortic area there was a remarkably loud, almost ringing, machine-like to and fro murmur, transmitted over the entire chest. No masses nor organs were palpable in the abdomen. The genitalia were those of a normal male. There was no edema.

Accessory Clinical Findings: The hemoglobin was 14.1 Gm., or 91 per cent. There were 4,820,000 red blood cells, with a color index of 0.9. There were 9980 leukocytes, with segmenters 80 per cent, stabs 2 per cent, large lymphocytes 5 per cent, small lymphocytes 10 per cent, basophils 1 per cent, monocytes 2 per cent. The blood Wassermann and Kahn tests were negative. The urine was cloudy and amber, with a specific gravity of 1.022, an acid reaction, no sugar, albumin 1 plus; microscopic examination showed it to be loaded with white cells, with rare red blood cells, many granular casts, a few hyaline casts, and no benzidine or acetone. Fluoroscopy showed a huge, non-expansile mass in the upper mediastinum. Venous pressure in the right arm was 390 mm. of water; in the left arm, 425 mm.

Course in the Hospital: The patient continued moderately dyspneic and continued to have the marked venous engorgement. On the day after admission, venous pressure in the left arm was 470 mm. of water; in the right arm, 400 mm. of water. On July 16, 1940, the arterial blood pressure readings were: left arm, 130/60; right arm, 130/68; left leg, 140/80; right leg, 148/70. He became more and more stuporous. On the fifth day 400 cc. of blood were removed by phlebotomy. Stupor deepened. The pulse rate ran between 120 and 140. Respirations varied between 24 and 34. On the sixth day the temperature rose to 39.3 C., and the patient expired at noon.

Discussion

DR. RUFFIN: This man obviously had syphilis and an aneurysm of the aorta. At the age of 17, forty-two years ago, he had an initial lesion and received inadequate treatment. He was entirely symptom free until four years ago, at which time he experienced a severe precordial pain accompanied by moderate dyspnea. Examination of the chest at that time revealed very little evidence of disease, but fluoroscopic examination showed a definite widening of the aorta.

It is of interest to note that for four years he was comparatively comfortable. After moderate exertion, a hearty laugh, he suddenly became breathless, and noted marked distention of his neck veins. On examination, the most striking findings were the distention of the veins over the face and neck and a to and fro murmur over the chest. On fluoroscopic examination, a large non-expansile mass was seen in the upper mediastinum. The other finding of interest was the high venous pressure, about 400 mm. of water.

There are two explanations for the clinical picture which this man presents:

(1) A sudden dilatation of his aneurysm pressing upon the return circulation.
(2) Rupture of the aneurysm into the mediastinum.

The sudden onset with the marked interference to the venous return suggests that his aneurysm ruptured.

Clinical Impression:

1. Syphilis.
2. Syphilis of the aorta with aneurysm.
3. Rupture of aneurysm into the mediastinum.

Pathological Discussion

DR. SPRUNT: The anatomical diagnosis in this case was: Syphilitic aortitis and slight involvement of the aortic valve; syphilitic aneurysm of the ascending arch of the aorta, with rupture into the superior vena cava; chronic passive congestion of the liver; fibrous pleural adhesions, left; multiple small cysts of the left kidney; adhesions of the liver, spleen, and omentum; benign prostatic hypertrophy, slight; atrophy of the testes.

It is thus seen that Doctor Ruffin's analysis was correct, except that the rupture occurred into the superior vena cava, thus elevating the venous pressure. It is also interesting in this case that the heart showed no enlargement. This is understandable, however, in that the syphilis involved the aortic valve to a slight degree only. The other organs showed nothing of interest.

CASE REPORT

NORTH CAROLINA BAPTIST HOSPITAL

WINSTON-SALEM

A white male, 30 years of age, was admitted to the hospital complaining of severe epigastric pain.

The onset of the illness was somewhat indefinite. The patient stated that he had been having epigastric pain for a number of years, but during the past year the pain had been much worse. About one month prior to admission the pain became so severe that it was not relieved by a quarter-grain of morphine. The pain was localized in the mid-epigastrium, and was severe and boring in character. Nausea and vomiting had been present the last month. Vomiting followed the intake of all food, regardless of its character. The patient had become somewhat more constipated than he normally was, but at no time had he noticed any change in the color of his stools.

About two months prior to admission, the patient developed a severe cough, productive of a mucopurulent appearing material. Hemoptysis had not occurred. During the past year his weight had fallen from 160 to 115 pounds.

Past History: The patient had been an alcoholic for the past fifteen years. He had been a known syphilitic for the past eight years, and had had some treatment, the amount not ascertained.

The family history was not contributory.

Physical examination revealed an emaciated, dehydrated, white male who appeared much older than the age stated, and who appeared to be in acute pain. *Eyes:* His vision was markedly diminished. He was unable to see fingers held about 24 inches away. Because of uncooperativeness on the part of the patient, the eye grounds were not examined. The pupils were round, very small and failed to react to light and accommodation. *Lungs:* Many crepitant rales were heard throughout both fields. The resonance was not impaired. Expansion was equal. *Heart:* The left border was increased considerably. No murmurs were heard, and the tones were of fair quality. The rhythm was regular. The abdomen was of the scaphoid type. There was a right rectus scar. Marked tenderness was noted over the upper abdomen. No masses were palpated. The kidneys, liver and spleen were not palpated.

The blood pressure was 220 systolic, 140 diastolic; pulse 100; temperature 99 F.; respirations 20.

Examination of the urine on admission showed an acid urine with a 4 plus reaction for sugar, 2 plus for albumin, a moderate number of hyaline casts, occasional granular casts and one or two white cells per high power field. There were 4.850,000 red cells, with the hemoglobin 90 per cent; there were 19,900 white cells, with 90 per cent polymorphonuclears and 10 per cent lymphocytes. Sputum examination revealed many leukocytes, many staphylococci, streptococci and diplococci. No tuberculous organism was found.

On the night of the fifth day in the hospital, the patient developed a profuse hemorrhage from the nose and mouth. After nine days in the hospital he expired very suddenly.

Clinical impression:

1. Malignant nephrosclerosis.
2. Syphilis with possible tabetic crisis.
3. Gastritis (alcoholic).
4. Cirrhosis of the liver.

Autopsy Findings

Autopsy revealed an emaciated white male, 30 years of age. There was a moderate degree of lymphadenopathy involving the cer-

vical, axillary and inguinal lymph nodes.

The peritoneal surfaces were smooth, and a moderate degree of lymphadenopathy was observed involving the mesenteric lymph node. The same general lymphadenopathy was found within the mediastinum. Microscopic sections from the lymph nodes showed many large mononuclear cells, and in some areas, an increase in the amount of fibrous tissue.

The liver weighed 1580 Gm. The outer surface was dark red in color; the inferior surface was roughened and somewhat nodular. On section the tissue was firm, and in areas appeared to be quite fibrous. Microscopic sections showed definite fibrosis, and many of the liver cells contained large vacuoles within their cytoplasm. The spleen, pancreas and suprarenal glands failed to reveal definite pathological changes.

The mucosa of the stomach was quite injected. Microscopically, the capillaries were found to be dilated; red blood corpuscles and chronic inflammatory cells were found in large numbers within the mucosa and submucosal areas. Lesions were not found within the stomach or esophagus to indicate the presence of an ulcer, healed ulcer or varicosities.

The right kidney weighed 245 Gm., the left kidney 200 Gm. The cortical surfaces were quite granular and roughened, showing several large areas where the capsule was adherent. The cortical and medullary markings revealed several areas of scarring and fibrosis. Microscopic findings within the kidney showed fibrous crescents and hyalin changes within the glomeruli. Marked thickening of the arterioles was observed throughout the kidney substance.

The heart weighed 445 Gm. The myocardium was thickened over the left ventricle; the endocardial surfaces and valves were normal. Roughened ivory plaques were found within the first portion of the aorta, and the ostia of the coronary arteries were greatly reduced in size. Microscopic sections taken from the aorta revealed areas of necrosis within the media and heavy infiltration with lymphocytes.

The pleural surfaces were smooth and glistening, and on section through the lungs only a moderate degree of congestion was observed near the base of each lung. Microscopically, a few chronic inflammatory cells were found to be scattered diffusely throughout the lung tissue, and several areas of increased fibrosis were encountered.

Pathological Diagnosis:

1. Syphilitic aortitis with coronary ostia stenosis.
2. Alcoholic cirrhosis of the liver.
3. Malignant nephrosclerosis.
4. Acute gastritis.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D.

Raleigh

MALPRACTICE—*Negligence must be proximate cause of alleged injury; physician and surgeon not an insurer of results.*

In suits for negligence instituted against physicians, two rules which are of importance are: (1) Negligence must be the proximate cause of the alleged injury; and (2) the physician and surgeon is not an insurer of results. In order to show the practical application of these two rules, a case is reviewed in which an action to recover damages was brought by the plaintiff for the death of his wife. He alleged that death was caused by the negligence of the defendant, a physician and surgeon, who at the request of the plaintiff had performed an operation (presumably the induction of labor) upon his wife about one hour before her death.

The allegations contained in the complaint were essentially as follows: First, the defendant failed to prepare the patient properly for operation, and did not make a pre-operative examination. Second, the defendant left the patient before she had recovered from the anesthetic and without providing for the presence of another physician or of a competent nurse. The plaintiff alleged that in this negligence lay the direct and proximate cause of death.

The deceased, referred to as the plaintiff's intestate, was the plaintiff's wife. At her death on May 30, 1928, she was 18 years of age. She had been receiving prenatal care by the defendant and was to come to term some time in June, 1928. Because of untoward symptoms—specifically mentioned were swelling of the feet and legs—the physician advised interference, and as a consequence the procedure was carried out in the home of the deceased. The defendant secured the services of another physician to administer the anesthetic, but this doctor's duties were concerned only with the giving of the anesthetic. Following the operation the anesthetist remained with the patient about five minutes, and the attending physician for a period of thirty-five minutes. After assuring the husband that the patient's condition was satisfactory, the defendant left the home while the patient was still under the influence of the anesthetic. Shortly after his leaving, the intestate suffered a severe hemorrhage and died about one hour following the termination of the operation.

The defendant requested nonsuit in the case, and this was granted by the trial court, whereupon the plaintiff appealed. The action of the lower court in allowing nonsuit was affirmed by the Appellate Court, and the following statement was made by that tribunal: "Where evidence does not tend to show that alleged negligence proximately caused damage nonsuit is proper." In substantiation the following statement was added: "Wherein an action to recover damages for the death of plaintiff's intestate, alleged to have been caused by the negligence of the defendant physician in performing an

operation on her, there must be sufficient evidence of a causal relation between the alleged acts of negligence and the injury, and where the evidence viewed in the light most favorable to the plaintiff fails to show that the alleged acts of negligence of the defendant, in failing to exercise due care to make an adequate examination of the deceased before the operation, and his alleged negligence in leaving her before she recovered from the effects of the anesthetic, without providing a nurse, were a proximate cause of the death of intestate, the defendant's motion for judgment as of nonsuit is properly allowed."

The Court's remarks with reference to the second principle—namely, that the physician and surgeon is not an insurer of results—are as follows: "A physician and surgeon is not an insurer of the life of his patient; even when he has failed to exercise due care in the treatment of his patient or in the performance of an operation, he cannot be held liable for the death of his patient, in the absence of evidence legally sufficient to show that his negligence was the cause of death."

North Carolina Supreme Court Report, Book 199, p. 246.

BULLETIN BOARD

PRESIDENT'S MESSAGE

DR. THOMAS W. MASON LONG

An Appreciation

Nature was kind to him in its endowments of body and mind. The best that heredity could give him from a long line of notable and worthy ancestors was his. Cultivation and study further enriched his ability and personality.

A versatility of interests gave him a sympathetic and close contact with many professional and lay groups in North Carolina. Humanitarianism was a driving force within him. He gave of his skill and vitality as readily to his humblest patient as to the prosperous and well-to-do.

The quality of his mercy was never strained. Courage and faith walked with him all of his days. They were his unfailing friends when he realized that in his hourglass of time, the stream of life was running thin.

He was true to the best that men saw in him. He was able to endure the hurt and loss for which there is no cure. Still unafraid he faced death patiently and undismayed.

A fine gentleman and a true physician has gone from our midst. Each day of his useful life he lived and toiled for others. Even to his last hour that was his effort and his creed.

How well might we say of him with the poet:

When night slips down and day departs
And rest returns to weary hearts,
How fine it is to close the book
Of records for the day, and look
Once more along the traveled mile
And find that all has been worth while;
To say: "In honor I have toiled:
My plume is spotless and unsoiled.

—Edgar A. Guest.

HUBERT B. HAYWOOD, M.D.

A REQUEST BY THE CANCER COMMITTEE

In the past few years the Cancer Committee has made varied approaches to the problem of cancer education. The first one was to the laity. Working in close coordination with the Field Army of the Society for Control of Cancer, we furnished speakers for audiences of club women, parent-teacher associations, church groups, civic clubs and many other organizations. We felt that this work helped but did not fulfil our mission.

Our next approach was to the medical profession, asking their full cooperation. We requested that the District Societies devote one meeting a year to cancer. This was done by most of the Districts, and the symposia were excellently prepared and would have been a credit to any National Society. We felt that these programs called the attention of most of the physicians in the state to this important field of medicine. It has caused all of us to think of this most dreadful disease. The response of the entire profession was all that could be desired.

For this year's undertaking the Committee has decided to adopt the method of the organizations fighting tuberculosis. The educational work of these has been outstanding, and perceptible results obtained.

These societies have taken the programs to the youth. We feel that the boys and girls of high school and college age will retain this information. They will use it in their present homes among their parents, brothers, and sisters. They will later take it to their own homes. Taking these thoughts into consideration, we have planned this year to attempt to have a cancer talk made in every high school and college in the state. These talks are to be made by local or invited physicians, if physicians can be had for this

work. If not we hope to have a nurse or a science teacher in the school to read a paper on cancer furnished to them by us.

We ask the assistance of every County Medical Society in the state in this work.

We will appreciate the cooperation of every physician in the state. If you are willing to take part in this program, please write the chairman at once offering your services. We will gladly furnish you with any data or reprints that we have at our disposal.

Committee:

H. B. IVEY, *Chairman*, Goldsboro
T. LESLIE LEE
C. C. CARPENTER.

MINUTES OF THE EXECUTIVE COMMITTEE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

February 9, 1941

The Executive Committee of the Medical Society of the State of North Carolina met at 11 a. m. Sunday, February 9, 1941, in the Sir Walter Hotel, Raleigh, N. C. The meeting was called to order by the President, Dr. Hubert B. Haywood, who stated that its purpose was to fill the vacancy caused by the death on February 3, 1941, of the Secretary-Treasurer, Dr. T. W. M. Long, and to transact such other business as might come up.

The following members were present:

Dr. Hubert B. Haywood, Raleigh, President
Dr. F. Webb Griffith, Asheville, President-Elect
Dr. D. W. Holt, Greensboro, First Vice President
Dr. T. C. Kerns, Durham, Second Vice President

Councilors

Dr. H. D. Walker, Elizabeth City, First District
Dr. Thomas Leslie Lee, Kinston, Second District
Dr. W. Houston Moore, Wilmington, Third District
Dr. G. W. Mitchell, Wilson, Fourth District
Dr. J. G. Pate, Gibson, Fifth District
Dr. George L. Carrington, Burlington, Sixth District
Dr. Robert H. Crawford, Rutherfordton, Seventh District
Dr. James H. McNeill, North Wilkesboro, Eighth District
Dr. I. E. Shafer, Salisbury, Ninth District.

Dr. Donnell B. Cobb, Goldsboro, Chairman of the Legislative Committee, was also present.

At the President's suggestion, the members stood for a minute in silent tribute to Dr. Long.

On motion, the reading of the minutes of the last meeting of the Executive Committee was dispensed with.

The President called for any unfinished business. None appearing, the Committee proceeded to the consideration of new business.

President Haywood explained that he had called the Executive Committee together at this early date after Dr. Long's death because of the shortness of time until the annual meeting of the Society and the imperative need to choose a successor to Dr. Long as Secretary-Treasurer, both on that account and because of the legislative matters which were in his hands.

Dr. I. H. Manning of Chapel Hill was unanimously elected to fill the position of Secretary-Treasurer.

Dr. F. Webb Griffith moved that the $100 monthly salary of Miss Margaret Long, secretary to the late Secretary-Treasurer, be continued, and that the incoming Secretary-Treasurer be urged to utilize her services if practicable. This motion was duly seconded, and when put to vote was carried unanimously.

Dr. I. E. Shafer moved that the salary of Dr. Long be paid until the expiration of his term of office, the motion being seconded by Dr. Kerns. An amendment providing that the salary be paid until May 1, 1941, was offered by Dr. G. W. Mitchell, seconded by Dr. Kerns, and accepted by Dr. Shafer. The amended motion was then put to vote and was unanimously carried.

The President appointed Dr. McNeill as chairman of a committee to draw up suitable resolutions on the death of Dr. Long, asking him to choose two other members of the Executive Committee to serve with him. At the request of Dr. McNeill, Dr. Mitchell and Dr. Holt agreed to serve on the committee.

Dr. Griffith brought up the matter of whether the Committee on Medical Preparedness should or should not ask the Honorable Josiah W. Bailey, Senior Senator from North Carolina, to sponsor in Congress a measure providing for payment to physicians for examination of draft-board selectees. There was considerable discussion on this matter, and also on the practicability of having the examinations made by Army medical officers.

Dr. Mitchell offered the following motion: Resolved, that the Executive Committee of the Medical Society of the State of North Carolina, through the Chairman of its Committee on Medical Preparedness, ask the War Department, through the proper channels, to set up an examining board in each congressional district, to act in lieu of the examiner attached to each draft board, such examining boards to be composed of regular Army medical officers, in order that the decision of the examining board to accept selectees for Army service may be final. This motion was seconded by Dr. Shafer, who offered an amendment to provide that the local examiner act as advisor to the Army examining board. The amendment was seconded by Dr. Holt and was accepted by Dr. Mitchell, and the motion as amended was adopted.

The President was requested to see General John B. Van Metts, the Adjutant General of North Carolina, and communicate to him the action taken by the Executive Committee in adopting the foregoing motion and to offer to the War Department, through him, the use of all local hospital facilities, x-ray equipment, laboratories, etc.

Dr. Holt at this time reported that he had had a telephone conversation with Dr. I. H. Manning and that Dr. Manning had agreed to act as Secretary-Treasurer until the regular meeting of the Society in May.

No further business appearing, the Committee, on motion of Dr. Lee, adjourned at 12:40 p. m.

NOTICE

Space is still available for scientific exhibits at the meeting of the Medical Society of the State of North Carolina to be held in Pinehurst, May 19, 20, and 21. Anyone desiring space should write Dr. I. H. Manning, Chapel Hill, or Miss Margaret Long, Roanoke Rapids.

News Notes From the University of North Carolina

The School of Medicine and the Extension Division of the University of North Carolina will sponsor two Post Graduate courses in Medicine during the spring, at Wilson and at Raleigh. The dates and the program for the meetings follow.

Post Graduate Course in Medicine, Wilson, March 5—April 16, 1941

Dinner: 7:00 p. m., Hotel Cherry.
Lecture: 7:00 p. m., Hotel Cherry.
Clinics: Announcement of dates and place will be made at the first meeting.

Program

Wednesday, March 5—The Catastrophes of Peptic Ulcers: Dr. E. L. Eliason, University of Pennsylvania, Philadelphia.

Wednesday, March 19 — Gastro-Intestinal Diseases in Children: Dr. Alexis F. Hartman, Washington University, St. Louis, Mo.

Wednesday, March 26—The Interpretation of Serologic Tests for Syphilis: Dr. J. E. Moore, Johns Hopkins University, Baltimore, Md.

Wednesday, April 2—The Heart in Pregnancy: Dr. Wm. B. Porter, The Medical College of Virginia, Richmond, Va.

Wednesday, April 9 — Clinico-Pathological Conference: Dr. Balduin Lucke and Dr. Francis Wood, The University of Pennsylvania, Philadelphia.

Wednesday, April 16—The Management of Pregnancy: Dr. Edward A. Schumann, University of Pennsylvania, Philadelphia.

Post Graduate Course in Medicine, Raleigh, March 14—April 26, 1941

Clinics: 4:30 p. m., State Laboratory of Hygiene Building.
Dinner: 7:00 p. m., Carolina Hotel Ball Room.
Lecture: 8:00 p. m., Carolina Hotel Ball Room.

Program

Friday, March 14—Uses and Abuses of Sulfanilamide, Sulfapyridine, Sulfathiazole: Dr. Harrison F. Flippin, University of Pennsylvania, Philadelphia.

Thursday, March 20—Gastro-Intestinal Diseases in Children: Dr. Alexis F. Hartman, Washington University, St. Louis, Mo.

Friday, March 28—Diagnosis and Common Treatment of Diseases of the Colon and Rectum: Dr. Louis A. Buie, Mayo Clinic, Rochester, Minn.

Friday, April 4 — Diagnosis of Acute Abdominal Conditions: Dr. W. Wayne Babcock, Temple University, Philadelphia.

Friday, April 11 — Diagnosis and Treatment of Anaemias: Dr. Russel L. Haden, Cleveland Clinic, Cleveland, Ohio.

Thursday, April 17—The Management of Pregnancy: Dr. Edward A. Schumann, University of Pennsylvania, Philadelphia.

Friday, April 25—Office Urology: Dr. P. S. Pelouze, University of Pennsylvania, Philadelphia.

* * *

Mr. Selskar M. Gunn, Vice President of The Rockefeller Foundation, visited the School of Public Health the latter part of January and spoke to the students and faculty on "Public Health and Its Scope".

News Notes From the North Carolina Tuberculosis Association

Dr. R. L. Carlton of Winston-Salem, member of the board of directors of the Winston-Salem Tuberculosis Association and North Carolina representative director of the National Tuberculosis Association, has been appointed chairman of the Committee on Nomination of Directors of the National Tuberculosis Association. The appointment was made by Dr. Paul McCain, president of the National Tuberculosis Association.

Dr. P. A. Yoder, Superintendent of the Forsyth County Sanatorium, Winston-Salem, and a member of the Executive Committee of the North Carolina Tuberculosis Association, is a member of the Committee on Nominations of the American Trudeau Society.

* * *

Preliminary figures furnished by thirty-one states and the District of Columbia to the U. S. Public Health Service for the first six months of 1940 show that the tuberculosis death rate in that period is 1.8 per cent less than the rate for the corresponding period in 1939.

* * *

The annual meeting of the North Carolina Tuberculosis Association will be held in Greensboro on Wednesday, April 30. The Program Committee, composed of the president, Mrs. Chas. E. Platt, Dr. Paul McCain, Dr. Paul Yoder, and Frank Webster, is now working on the program for this meeting.

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Two full tuition scholarships of $600 each are available in the field of health education at Massachusetts Institute of Technology for 1941-42. They are available for women only. The scholarships will be awarded in June, 1941, and applications should be received not later than April 30. Any one interested is invited to write to the Child Health Education Service of the National Tuberculosis Association, 1790 Broadway, at 58th Street, New York, N. Y., for application blanks.

News Notes From the State Board of Health

Fifteen tiny infants were either smothered to death by bed clothing or died of suffocation when sleeping parents rolled over on them, during the month of January, this year, according to reports received by the State Board of Health's Division of Vital Statistics, of which Dr. R. T. Stimpson is the Director.

During every year there are about seventy-five such deaths in North Carolina, attaches of the Vital Statistics Division point out.

Of the fifteen victims reported last month, eight were white and seven were Negro babies.

Appointments in Class H-V(S) and Class H-V(P), U. S. Naval Reserve

The appointment of commissioned and warrant officers qualified for specialists duties in connection with the Medical Corps of the Navy in Class H-V(S), U. S. Naval Reserve; and the appointment of third and fourth year medical and dental students as Ensigns Class H-V(P), U. S. Naval Reserve, has recently been authorized.

Further information and instructions for submitting applications may be obtained by addressing The Commandant, Sixth and Seventh Naval Districts, Navy Yard, Charleston, S. C.

TRI-STATE MEDICAL ASSOCIATION

The Tri-State Medical Association of the Carolinas and Virginia met at the O'Henry Hotel in Greensboro on February 24 and 25. The following program was presented:

Monday, February 24, 10 a. m.

"Postoperative Distention" — Dr. Irwin G. Linton, Charleston.

"The Use of Encephalography in the Diagnosis of Subdural Hematoma"—Dr. William Reid Pitts, Charlotte.

"An Analysis of Fifty Cases of Shock Treated With Plasma"—Drs. Charles S. White, J. Lloyd Collins, and Jacob Weinstein, Washington.

"Blood Plasma Transfusion" (Lantern Slides)—Dr. John Elliott, Salisbury.

"On the Physiology and Pathology of Breast Tumors" (Illustrated)—Dr. Ivan Proctor, Raleigh.

"The Mechanism of Cardiac Pain and Its Differentiation From Other Chest Pains"—Dr. Tom W. Baker, Charlotte.

2 p. m.

Clinic—Conditions of High Blood Pressure—Dr. E A. Hines, Jr., of the Mayo Clinic.

Clinic—Splenectomy in Blood Dyscrasias—Dr. J. W. Tankersley, Greensboro.

Clinic — X-Ray Diagnostic Studies of the Uterine Cavity by a New Method—Dr. W. B. Norment, Greensboro.

Clinic—Allergy—Dr. E. W. Vaughn, Greensboro.

"Pulmonary Hemorrhage"—Dr. Karl Schaffle, Asheville.

"The Roentgen Treatment of Cutaneous Epitheliomas"—Drs. Allen Barker, Charles H. Patterson and Charles D. Smith, Roanoke.

"Cancer and Its Therapy"—Dr. Wright Clarkson, Petersburg.

8 p. m.

Address of the President—Dr. Charles J. Andrews, Norfolk.

Address of the President-Elect — Dr. Addison G. Brenizer. Charlotte.

Address—"The General Problems of Old Age"—Dr. Lewellys F. Barker, Baltimore.

Address—"The Present Status of Chemotherapy in the Treatment of Infected Wounds and Septicemia"—Dr. Hiram Winnett Orr, Lincoln, Nebraska.

Tuesday, February 25, 9 a. m.

"The Present Status of Prostatic Surgery—Analysis of Our Last 91 Cases"—Dr. Raymond Thompson, Charlotte.

"Skin Grafting in Orthopedic Conditions"—(Lantern Slides)—Dr. W. M. Roberts, Gastonia.

"Forty-Two Years of Appendicitis"—Dr. Robert L. Gibbon, Charlotte.

"Information of Clinical Value Gained From Uterine Curettings"—Dr. Robert P. Morehead, Bowman Gray School of Medicine.

"Hand Injuries"—Dr. James W. Davis, Statesville.

"Lipodystrophia Progressiva"—Dr. George R. Wilkinson, Greenville, S. C.

"Gunshot Wounds of the Pregnant Uterus"—Dr. T. C. Bost, Charlotte.

"A Consideration of Clean Wound Healing"—Dr. William H. Prioleau, Charleston.

"The Potent Drug Iodine" — Dr. J. G. Johnston, Charlotte.

2 p. m.

Clinic—Rheumatic Fever — Dr. C. M. Gilmore, Greensboro.

Clinic—Certain Nervous and Mental Conditions—Drs. Wesley Taylor and J. Fred Merritt, Greensboro.

Clinic—Carcinoma—Dr. E. D. Apple, Greensboro.

"Problems in Heredity"—Dr. William Allan, Charlotte.

"On Preventing Blindness"—Dr. Herbert C. Neblett, Charlotte.

"The Physiology of the Nose—And What Not To Do" (Motion Picture) — Dr. Shahane Taylor, Greensboro.

8 p. m.

Address—"Visual Disturbances in Avitaminosis"—Dr. V. P. W. Sydenstricker, of the Medical School of the University of Georgia, Augusta.

Address—"Some Phases of Obstetric Care"—Dr. R. G. Douglas, of the Lying-In Hospital, New York.

Address—"The Background and Treatment of Hypertensive Disease"—Dr. Edgar A. Hines, Jr., of the Mayo Clinic.

At the business meeting held on Tuesday afternoon, the following officers for next year were elected: Dr. George Wilkinson, Greenville, S. C., president-elect; Dr. J. M. Northington, Charlotte, secretary-treasurer; Dr. J. W. Hooper, Wilmington, Dr. H. J. Langston, Danville, and Dr. George Bunch, Columbia, vice presidents. Councillors, elected for a period of three years, are: Dr. Steele Dendy, Spartanburg; Dr. J. W. Davis, Statesville; and Dr. Allen Barker, Roanoke. Dr. A. G. Brenizer of Charlotte, president-elect, ascended to the presidency.

SOUTHEASTERN SURGICAL CONGRESS

The Twelfth Annual Post Graduate Assembly of the Southeastern Surgical Congress was held in Richmond, Virginia, on March 10, 11, and 12. The following program was presented:

Monday, March 10, 9 a. m.

Robert L. Sanders, M.D., University of Tennessee—"Multiple Carcinomata of the Stomach: Case Report." Illustrated.

Frederick H. Falls, M.D., University of Illinois—"Ectopic Pregnancy." Illustrated.

R. Arnold Griswold, M.D., University of Louisville—"The Treatment of Recent Compound Wounds." Illustrated.

Bradley L. Coley, M.D., New York City—"Conservative Surgery in The Treatment of Bone Tumors." Illustrated.

Hu C. Myers, M.D., Philippi, West Virginia—"Duodenal Drainage in the Diagnosis of Gall Bladder Disease." Illustrated.

Gershom J. Thompson, M.D., The Mayo Clinic, Rochester, Minn.—"Carcinoma of the Prostate: Its Conservative Surgical Treatment." Illustrated.

2:30 p. m.

Fred Rankin, M.D., Lexington, Ky.—"Surgical Treatment of Adenomatosis of the Colon." Illustrated.

Fred M. Douglass, M.D., Toledo, Ohio—"Surgery of the Biliary Tract." Illustrated.

Walter B. Martin, M.D., Norfolk, Va.—"The Interdependence of Medicine and Surgery."

Willis C. Campbell, M.D., Memphis, Tenn.—"Treatment of Compound Fractures." Illustrated.

Alfred B. Longacre, M.D., Tulane University—"Immunity in Staphyloccoccus Infections." Illustrated.

William L. Estes, Jr., M.D., Bethlehem, Pa.—"Non-Penetrating Trauma of the Abdomen." Illustrated.

8 p. m.

Memorial to Doctors Miller and Long—T. C. Davison, M.D., Atlanta, Ga.

Presidential Address—Irvin Abell, M.D., Louisville, Ky.

The C. Jeff Miller Lecture, by Frank H. Lahey, M.D., Boston, Mass.—"The Surgical Treatment of Gastric Duodenal and Jejunal Lesions." Illustrated.

V. P. Sydenstricker, M.D., Augusta, Ga.—"The Importance of Vitamin Treatment in Preparation and Post-Operative Care of Patients." Illustrated.

Brien T. King, M.D., Seattle, Wash.—"A New and Function Restoring Operation for Bilateral Abductor Cord Paralysis." Illustrated.

Tuesday, March 11, 9:00 a. m.

E. S. Gurdjian, M.D., Detroit, Mich.—"Pathology and Surgical Management of Acute Head Injury." Illustrated.

Everard A. Wilcox, M.D., and Robert Greenblatt, M. D., Augusta, Ga.—"The Hormonal Therapy of Small Fibro-Myomata of the Uterus." Illustrated.

Frank Philip Coleman, M.D., and Gordon S. Seastrunk, M.D., Columbia, S. C.—"Individual Ligation in Pneumonectomy and Extra-mediastinal Individual Ligation in Lobectomy—An analysis of the authors series." Illustrated.

Parker C. Hardin, M.D., Monroe, N. C.—"Cod Liver Oil Therapy of Wounds and Burns." Illustrated.

James R. Garber, M.D., Birmingham, Ala.—"Realities in Obstetrics."

W. Lowndes Peple, M.D., Richmond, Va.—"The Results of Radium Treatment of Cancer of the Cervix." Illustrated.

2:30 p. m.

Elkin L. Rippy, M.D., Nashville, Tenn.—"Management of Gun Shot Wounds of the Abdomen." Illustrated.

Alfred I. Folsom, M.D., Dallas, Texas—"Some Minor Urological Procedures of Value to the General Practitioner." Illustrated.

J. M. Emmett, M.D., Clifton Forge, Va.—"The Surgical Treatment of Carcinoma of the Stomach." Illustrated.

Charles F. Geschickter, M.D., Baltimore, Md.—"The Endocrine Aspect of Chronic Cystic Mastitis." Illustrated.

J. Orville Morgan, M.D., Gadsden, Ala.—"Surgery in Peptic Ulcer." Illustrated.

Byrd Charles Willis, M.D., Rocky Mount, N. C.—"The Diagnosis and Treatment of Delayed and Immediate Traumatic Rupture of the Spleen with Report of Cases." Illustrated.

Wednesday, March 12, 9:00 a. m.

Temple Fay, M.D., Philadelphia, Pa.—"Further Observations on Human Refrigeration." Illustrated.

Harley R. Shands, M.D., Jackson, Miss.—"Cancer of the Ovary." Illustrated.

C. C. Howard, M.D., Glasgow, Ky.—"Review of 6,000 Spinal Anesthetics from the Viewpoint of the Surgeon." Illustrated.

William G. Hamm, M.D., and Jos. Hiram Kite, M.D., Atlanta, Ga.—"The Relief of Contractures of the Knee Following Extensive Burns." Illustrated.

Walter G. Stuck, M.D., San Antonio, Texas—"The Prevention of Deformities from Compound Fractures." Illustrated.

Conrad G. Collins, M.D., New Orleans, La.—"Management of Abortion." Illustrated.

2:30 p. m.

Gabriel Tucker, M.D., Philadelphia, Pa.—"Cancer of the Larynx, Diagnosis, Treatment and Results, with Observations on the Relation of Benign Tumors to Cancer." Illustrated.

J. Duffy Hancock, M.D., Louisville, Ky.—"Mesenteric Tumors." Illustrated.

Robert B. McIver, M.D., Jacksonville, Fla.—"Ureterocolostomy: A Study of Late Results." Illustrated.

Edgar F. Fincher, M.D., Atlanta, Ga.—"Meningiomas." Illustrated.

Murdock M. Snelling, M.D., Gulfport, Miss.—"The Treatment of Chronic Cervicitis and Allied Conditions With The Surgical Diathermy." Illustrated.

Justus C. Pickett, M.D., Morgantown, W. Va.—"The Role of the Fascia in Low Back Pain." Illustrated.

Fourth District Medical Society

The Fourth District Medical Society met February 18 at Eureka. Dr. Adam Thorp of Rocky Mount gave a paper on "Interesting Phases of Eclampsia." Dr. Henderson Irwin presented a case of extensive burns.

Cumberland County Medical Society

The medical officers and wives of the Veterans Facility entertained the Cumberland County Medical Society at their Ladies Night dinner meeting on Thursday, February 27, 7 p. m., Veterans Hospital. The medical officers and their wives from Fort Bragg and other distinguished guests were present at the meeting.

Forsyth County Medical Society

The Forsyth County Medical Society held a dinner meeting at the Robert E. Lee Hotel, Winston-Salem, on February 11. Dr. David T. Smith, of Duke University, spoke on "The Clinical Application of Recent Advances in Bacteriology and Immunology".

Halifax County Medical Society

The Halifax County Medical Society held its regular monthly meeting on Friday night, February 14, at the Roanoke Rapids Hospital.

A resolution was passed that the society sponsor a movement to have the new sanatorium at Wilson named in memory of the late Dr. T. W. M. Long, who until his death had worked tirelessly to obtain this sanatorium for eastern North Carolina. Many members paid tribute to their beloved colleague during the meeting.

The Honorable Buxton Midyette of Jackson, North Carolina, was guest speaker of the evening. His subject, "The Physician's Legal Liability", was most instructive.

Mecklenburg County Medical Society

At the first monthly meeting of the Mecklenburg County Medical Society, held on February 4, the program originally planned for January 21 was heard. Dr. Raymond Thompson spoke on the "Present Status of Prostatic Surgery"; Dr. A. M. McDonald on "Umbrathor in the Diagnosis of Tumors of the Urinary Bladder"; and Dr. Aubrey Hawes on "Present Day Concepts in the Study of Male Sterility". On February 18 the Society heard papers on "Primary Peritonitis" by Dr. Charles Bunch, "Comparison of Hemorrhage and Hemograms in 100 Ear, Nose and Throat Operations With Cyclopropane, Nitrous Oxide and Ether Anesthesia" by Dr. Laurie Teasdale, and "The Use of Anti-Spasmodics in the Diagnosis of Lesions of the Upper Gastrointestinal Tract" by Dr. Phil Parsons.

Annual Congress on Medical Education and Licensure

The Thirty-Seventh Annual Congress on Medical Education and Licensure was held February 17 and 18 at the Palmer House, Chicago. Organizations meeting at the Congress were the Council of Medical Education and Hospitals of the American Medical Association, the Federation of State Medical Boards, and the Central Council for Nursing Education.

Institute of Industrial Medicine and Industrial Hygiene

A "post graduate" Institute of Industrial Medicine and Industrial Hygiene, attracting industrial health specialists from all parts of North and South America, will be held in Pittsburgh, May 5 to 9. Scores of pertinent papers and discussions are scheduled on the medical and engineering phases of employee health protection.

The Institute marks the twenty-sixth annual meeting of the American Association of Industrial Physicians and Surgeons, and the second annual meeting of the American Industrial Hygiene Association. Majority of the sessions will be held at Pittsburgh's William Penn Hotel.

A series of important dry clinics in Industrial Medicine and Surgery will be held at Mercy Hospital on the first day, Monday, May 5. John P. Griffith, M.D., chairman of the hospital clinic committee and professor of surgery, School of Medicine, University of Pittsburgh, will be in charge.

Prepared Material For Physicians

The Bureau of Health Education of the American Medical Association offers to local physicians the loan of prepared material for speakers addressing lay audiences. Even though a physician may be an able speaker, he frequently hesitates to accept invitations to speak before lay audiences because time is required to prepare material in suitable language for such audiences.

It is here that the **Hygeia** Clipping Collection loan service is of value. These collections consist of **Hygeia** material. They are patterned after the American Medical Association's Package Library. The advantage of this material is that it is written in non-technical language that the layman can understand. Thus, the physician is saved the effort of translating technical material into language easily understood by non-medical groups.

There are collections available on 82 topics; accompanying most collections is a speaker's outline. This outline is not intended as a fixed pattern which the speaker must follow but is merely offered as one way in which the material may be presented. As the physician reads the clippings, he may make his own notes on the outline and use only that portion of the material appropriate to his community.

The collections may be borrowed for a 10 day period and the only charge to the physician is the return postage for the bound material. Collections should be ordered at least two weeks in advance, and first, second, and third choice should be indicated since collections are not always available.

The demand for this material has grown tremendously the past several years. Several state medical societies, as well as a few county medical societies have found it to their advantage to develop speakers bureau library services of their own. In spite of the great demand for this material and the amount of publicity it has received, there are still a number of physicians who are not acquainted with the material offered by the Bureau. The practicing physician is not always a polished platform orator and welcomes aid of this type.

Loan Collections of Hygeia Material

Anesthesia	330.1
Anemia	92.1
Appendicitis and Laxatives	177.0
Athletics and Exercise	318.1
Blood Transfusions	131.0
Cancer	61.0
Child, Health of the Preschool	401.2
Child, Health of the School	401.1
Child's Health and His Future Career, The	291.0
Colds	151.4
Constipation and Cathartics	184.1
Communicable Diseases	47.1
Crippled Children	225.0
Deafness	121.1
Diabetes	74.1
Diet, Watch Your	302.4
Diseases, Nine Most Deadly	292.0
Doctors—City and County	322.1
Eyes, Adult's	120.1
Eyes, Children's	120.2
Family Medicine Chest, The	327.1
Feeding of Children	302.6
First Aid	349.0
Food, Drug and Cosmetic Racketeers	328.0
Food, Protection of	302.7
Gallbladder	180.1
Goiter and Other Glands	81.1
Growing Old Gracefully	261.1
Hair and Nails	236.0
Hay Fever—Allergy—Idiosyncrasy	305.1
Health Examinations	319.1
Health Examinations of Children	319.2
Healthy Living, Ten Points in	402.0
Heart Disease	150.1
Heredity and Eugenics	312.0
Hospitals	342.0
Industrial Health	348.1
Infant Hygiene	251.0
Infantile Paralysis	16.0
Kidneys	194.1
Leprosy	33.1
Maternal Hygiene	211.0
Mates or Mismates (Marriage)	426.0
Medical Advances, Outstanding	338.1
Medical Preparedness	347.0
Menstruation and the Menopause	208.0
Mental Hygiene—Adult	122.1
Mental Hygiene—Child	124.2

Milk	337.1
Narcotics	105.0
Nursing	343.0
Obesity	73.1
Physical Education	318.3
Physical Therapy, X-Ray, Radium	335.0
Pioneers of Medicine	338.2
Play, Leisure and Recreation	320.1
Pneumonia	154.1
Posture	228.1
Progress in Preventive Medicine	338.0
Public Health	332.0
Ringworm	233.1
Rheumatism	72.1
Safety	288.0
Sex Education	422.0
Skin	238.0
Superstitions	333.1
Surgery	310.0
Syphilis and Gonorrhea	34.1
Training for Athletics and Health	318.2
Teeth	172.2
Teeth, Children's	172.3
Tobacco and Alcohol	101.4
Tonsils and Adenoids	171.0
Tuberculosis	23.1
Tuberculosis in Childhood	23.2
Vacations	320.2
Ventilation	316.1
Youth	124.3

Examinations

American Board of Obstetrics and Gynecology

Candidates for **reexamination** in Part II examinations must make written application to the Secretary's Office before April 15, 1941.

In accordance with the previously announced plans of the Board, the examinations to be given for the Board's fiscal year 1941-42 (ending with the Part II examination in June 1942) will be the last for candidates under Group A and B classifications. Applications must be in the Secretary's Office at least 90 days in advance of the announced examination dates, which dates are published in the various medical journals. Following the close of the final date for receipt of Group B applications (October 1941) and Group A applications (March 1942) all candidates will be considered in one classification by the Board, thus doing away with the junior and senior groups for examination, and all candidates will be required to take the Part I examination (written paper and submission of case histories) as well as the Part II examination (oral and pathology).

Military service will not affect the eligibility of any candidate so far as the Board requirements regarding limitation of practice are concerned. Military service will under no circumstances be considered as an infringement of any regulations outlined in this Board's booklet.

The Board requests that all prospective candidates who plan to submit applications in the near future request and use the new application form which has this year been inaugurated by the Board. The Secretary will be glad to furnish these forms upon request, together with information regarding Board requirements. Address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

A New Journal on Medical Care

The first issue of **Medical Care**, a quarterly magazine, appeared on January 21. The new journal is a nonprofit enterprise under the auspices of the Committee on Research in Medical Economics, Inc., 1790 Broadway, New York, with Michael M. Davis, Chairman of this Committee, as its Editor. Williams and Wilkins Company are the publishing agents. Its stated purposes are "to disseminate information concerning the economic and social aspects of medicine, to promote a scientific approach to the subject, and to stimulate practical action by the profesions and the public in their common interest. The views and interests of the professions that furnish medical care and of the people who receive it are equally to be considered.

Post-Graduate Course in Ophthalmology

The George Washington University School of Medicine announces an intensive post-graduate course in ophthalmology to be held April 7-12, and a practical course in ocular surgery, pathology and orthoptics, limited to twenty-five participants, to be held April 14-19. The fee for the intensive course is $50.00. The fee for the practical course is $100.-00. The participants will be accepted in the order in which they enroll for the course.

News Notes

Dr. O. L. Miller, Charlotte, was installed as President of the American Academy of Orthopedic Surgeons at its recent meeting in New Orleans.

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Dr. Parker C. Hardin of Monroe and Dr. B. C. Willis of Rocky Mount read papers at the Post Graduate Assembly of the Southeastern Surgical Congress in Richmond on March 11. Dr. Hardin's paper was on "Cod Liver Oil Therapy of Wounds and Burns", and Dr. Willis' subject was "The Diagnosis and Treatment of Delayed and Immediate Traumatic Rupture of the Spleen, With Report of Cases."

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Dr. Lacey Andrews, formerly associated with Dr. William Coppridge of Durham, has opened offices in Winston-Salem for the practice of urology.

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Dr. Rowland T. Bellows, formerly assistant professor of Neurosurgery at the University of Rochester School of Medicine, has established offices for the practice of neurological surgery in the Professional Building at Charlotte.

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Drs. Albert and Irene Kossove have recently opened offices for the practice of general medicine at 1516 Elizabeth Avenue, Charlotte.

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Dr. E. J. Wannamaker, of Charlotte, has been appointed to the Moore County Award Committee to take the place of Dr. Thurman Kitchin.

Of the 22,000 recruits for the 6th Division of the Australian Imperial Force x-rayed last year, 109 had active pulmonary tuberculosis, undetected by the general medical examination. This is an incidence of just under one-half of one per cent or five per 1,000.

WOMAN'S AUXILIARY

ANNOUNCEMENT

Hotel Carter will be the headquarters for the Annual meeting of the Woman's Auxiliary to the American Medical Association which will be held in Cleveland, June 2-6, 1941. Requests for reservations should be sent immediately to Dr. Edward F. Kieger, Chairman of the Committee on Hotels and Housing, 1604 Terminal Tower Building, Cleveland, Ohio.

In Memoriam

DR. T. W. M. LONG

At a meeting of the Executive Committee of the Medical Society of the State of North Carolina in special session, February 9, 1941, a committee composed of Drs. James H. McNeill, George W. Mitchell, and D. W. Holt was appointed to express the deep regret of the Society at the untimely death of our fellow worker Dr. Thomas William Mason Long. The resolution follows:

RESOLVED: Whereas our Heavenly Father, the Great Physician, has seen fit to take from our midst our beloved friend and fellow worker, Dr. T. W. M. Long,

BE IT RESOLVED, that the members of the Medical Society of the State of North Carolina extend their deepest sympathy to his family and express our profound regret at his loss.

Dr. Long was graduated from the University College of Medicine, Richmond, Virginia, in 1908. He was licensed to practice medicine in North Carolina in 1909. He joined the State Society in 1910.

From Medical College he returned to his home town of Garysburg, North Carolina. There he did general practice for a year or two. He then moved to Roanoke Rapids, where he maintained his home until his death.

In that city, he organized, and for many years managed the Roanoke Rapids Hospital. Here, too, he managed to rid the county of malaria and was instrumental in establishing good public health procedures to such an extent that the region became a healthful one. Among the mill people of Roanoke Rapids he established procedures which assured good medical care for the low income group.

The combination of his personal popularity and his good public health work caused his election to the State Legislature about ten years ago. Since his first election, he has been repeatedly returned, and in later years, he was elected to the State Senate.

During the past fifteen years, Dr. Long has been on the managing boards of many of our State Hospitals.

Four years ago, he was elected Secretary-Treasurer of the Medical Society of the State of North Carolina, replacing Dr. L. B. McBrayer. Before and since that time he was most active in the affairs of the State Society, serving on many important committees.

The Medical Society wishes to express great appreciation for the excellence of his work and deep sorrow at his untimely passing. To his family, we extend our most sincere condolence.

BE IT FURTHER RESOLVED that a copy of these Resolutions be sent to the family of the deceased, the Medical Society of the State of North Carolina, the **North Carolina Medical Journal** and the lay press, and same incorporated in the minutes of the Medical Society of the State of North Carolina.

Committee:
James H. McNeill, M.D.
D. W. Holt, M.D.
George W. Mitchell, M.D.

We, the members of the Wake County Medical Society, recognizing the great loss sustained by the State of North Carolina as well as by the medical profession in the passing of Doctor Thomas William Mason Long of Roanoke Rapids, do adopt the following resolutions:

Whereas, Dr. Long has taken an active interest in the public affairs of the commonwealth, unselfishly sacrificing his time and his finances in order to represent his district so ably in the Legislature, and

Whereas, Dr. Long has so unstintingly devoted his life to the advancement of the interests of the medical profession, having served actively on various boards, and during the past several years having devoted a large part of his time to the secretaryship of the Medical Society of the State of North Carolina:

Be it resolved that we join with his many other friends, with his family and with his many grateful patients in paying a fitting tribute to the memory of one who was so invaluable in promoting health, happiness and good government until his final summons came;

And that copies of these resolutions be sent to his family, to the State Medical Society, and to the State Senate.

(Signed) Felda Hightower
Verne S. Caviness
Committee.

BOOK REVIEWS

Clinical Parasitology. By Charles Franklin Craig, M.D., Emeritus Professor of Tropical Medicine, Tulane University, New Orleans, Louisiana; and Ernest Carroll Faust, Ph.D., Professor of Parasitology in the Department of Tropical Medicine, Tulane University, New Orleans, Louisiana. Second Edition, thoroughly revised. Price, $8.50. Illustrated with 244 engravings. Lea and Febiger: Philadelphia, 1940.

The second edition of this book has been modified to include the important recent contributions in its field. The book was designed to contain in a concise form the essential facts concerning the animal parasites of man and the diseases which they produce, together with approved methods of diagnosis, treatment and control. It is much more than a college textbook in that it covers the entire field in a comprehensive fashion. There is a very good technical appendix and twenty pages of references covering the literature of clinical parasitology. This book is suitable for classroom use and is also an excellent reference book for physicians who come in contact with parasitic diseases. It ought to find a large field of usefulness in tropical medicine and public health work.

In Search of Complications. A Doctor's Autobiography. By Eugene de Savitsch, M.D. Price, $3.00. Pp. 396. New York: Simon and Schuster, Inc., 1940.

H. R. Knickerbocker wrote of this book and of its author: " . . . If I have met one man I have met ten thousand, and of them all I testify the most interesting one is Eugene de Savitsch. And of all the books written in our time the most curious, insane, fascinating, amazing thing of its kind is his **In Search of Complications.**"

The reader of **In Search of Complications** will certainly agree with the last two adjectives used by Mr. Knickerbocker. The book is so fascinating and so amazing from beginning to end that it is hard to put it down.

This book stands well apart from the general run of doctors' autobiographies which have appeared recently. Only the latter half of it can really be called "A Doctor's Autobiography", for the first half is the adventurous, almost incredible autobiography of a refugee from Red Russia who, after an interlude in Japan and a brief and gruesome career as an officer in the already defeated White army, came to America as an emigrant in 1923. The story of his vicissitudes in this country, of his research as a medical student, and of his experiences as an exchange student in Belgium and Africa is told in such a way that the reader's interest never flags.

Dr. de Savitsch's style is lucid and readable, and is touched throughout with a humor which is reminiscent of Hans Zinsser's. These qualities are all that is necessary to transform the diversified and amazing experiences of his life thus far into a dramatic and fascinating story. Dr. de Savitsch is yet a comparatively young man, and the reader hopes that, if the rest of his life is as exciting as the first part has been, he will publish some day a sequel to **In Search of Complications.**

A Surgeon Explains to the Layman. By M. Benmosche, M.D. 317 pages. Price $3.00. New York: Simon and Schuster, 1940.

This book is well written and the author's ideas clearly expressed; but it is apt to do more harm than good. Many years ago Oliver Wendell Holmes advised the young practitioner that "Your patient has no more right to all the truth you know than he has to all the medicine in your saddle-bags. . . . He should get only just so much as is good for him." When a patient needs an operation for appendicitis, for example, it will hardly help his peace of mind to know that there are various pitfalls in the way of making a clear-cut diagnosis, and that it is comparatively easy to mistake another pain in the abdomen for that of appendicitis.

While most of the medical foundation of the book is sound, some of the statements are, to say the least, controversial. For example, in discussing spinal anesthesia, Dr. Benmosche says: "He (the patient) will have to be placed at a slight angle —with his head higher than his feet—so that the anesthetic in his spinal canal will not rush up toward his brain." This is certainly contrary to the experience and custom of the surgeons in our parts. Another questionable statement is that "a diseased gall bladder can cause a pain in the left shoulder." Maybe so—but certainly not often in this reviewer's experience. In discussing peptic ulcer only three theories as to its cause are mentioned: too much alcohol, too much smoking, or excessive nervous tension. More briefly, these causes might be called alcoholic, nicotinic, or neurogenic. A moment's reflection will rule out the first two factors, since every doctor is familiar with some ulcer patients who have never used alcohol or tobacco.

The trouble with such a book is that the well-balanced individual would hardly be interested in it; whereas the psychoneurotic type would revel in it. One wishes that Dr. Benmosche had used the literary talent which he undoubtedly has to write something of less doubtful therapeutic value.

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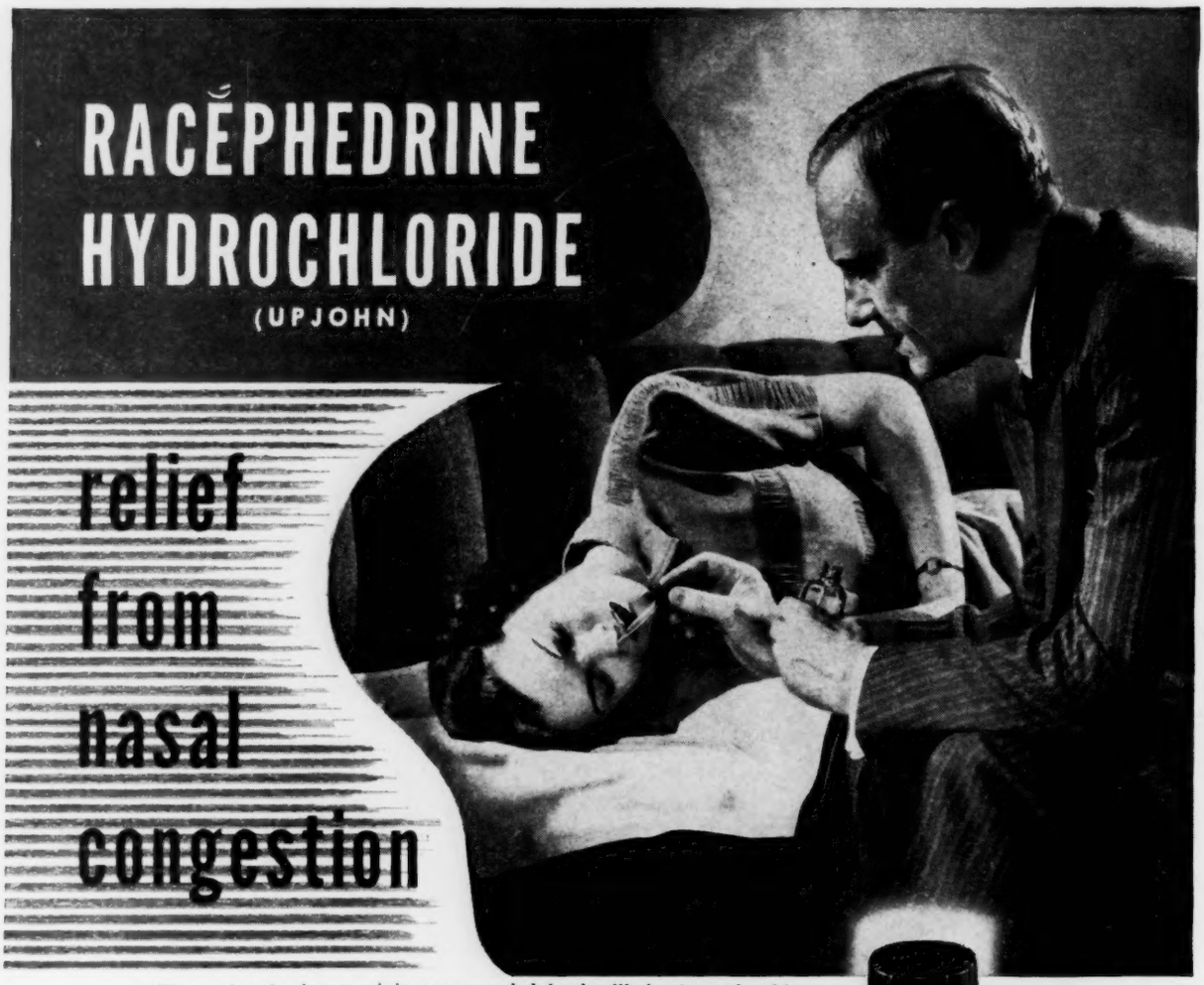

relief from nasal congestion

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Racĕphedrine is synthetic racemic ephedrine. On local application to nasal mucous membranes, a 1% solution contracts the capillaries to a moderate degree and thus diminishes hyperemia and swelling. It is used in the nostrils to shrink the congested mucosa in rhinitis and sinusitis.

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*Arch. Otolaryng. 17:787, 1933

Solution Racĕphedrine Hydrochloride 1% is available in one ounce dropper bottles for prescription purposes, and in pint bottles for office use.

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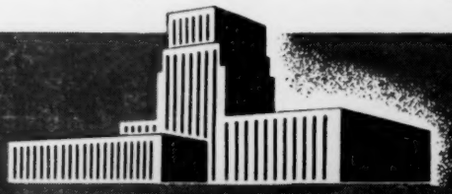

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